Job Stress, Job Satisfaction and Burnout in faculty of a teaching hospital in South India: a cross-sectional follow-up survey

ABHINAV CHICHRA

Dissertation submitted to The Tamil Nadu Dr.MGR Medical University, in part fulfilment of the requirement for MD Branch XVIII Psychiatry Final Examination to be held in April 2017

CERTIFICATE

I hereby declare that this dissertation titled 'Job Stress, Job Satisfaction and Burnout in faculty of a teaching hospital in South India: a cross-sectional follow-up survey' is a bonafide work done by Dr. Abhinav Chichra at the Department of Psychiatry, Christian Medical College. This work has not been submitted to any University in part or full.

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I hereby declare that this dissertation titled'Job Stress, Job Satisfaction and Burnout in faculty of a teaching hospital in South India: a cross-sectional follow-up survey' is a bonafide piece of work done by Dr Abhinav Chichra under my guidance at the Department of Psychiatry, Christian Medical College, Vellore. This work has not been submitted to any university in part or full.

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DECLARATION

I hereby declare that this dissertation titled "Job Stress, Job Satisfaction and Burnout in faculty of a teaching hospital in South India: a cross-sectional follow-up survey" is a bonafide work done by me under my guidance of Dr.Prathap Tharyan, Professor of Psychiatry, Christian Medical College, Vellore. This work has not been submitted to any university in part or full.

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The prevalence and determinants of job stress, job satisfaction and burnout in medical and surgical faculty of a teaching hospital in south India: a cross – sectional follow –up survey.
Dr. Abhinav Chichra (Emp. No. 29343), Psychiatry, Dr. Prathap Tharyan (Emp. No. 01739), Psychiatry, Dr. Akhil Abhijnhan, Psychiatry.

Ref: IRB Min No: 9724 [OBSERVE] dated 10.11.2015

Dear Dr. Abhinav Chichra
The Institutional Review Board (Blue, Research and Ethics Committee) of the Christian Medical College, Vellore, reviewed and discussed your project titled "The prevalence and determinants of job stress, job satisfaction and burnout in medical and surgical faculty of a teaching hospital in south India: a cross – sectional follow –up survey" on November 10th 2015.

I enclose the following documents:-
1. Institutional Review Board approval 2. Agreement

Could you please sign the agreement and send it to Dr. Nihal Thomas, Addl. Vice Principal (Research), so that the grant money can be released.

With best wishes,

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The Committee reviewed the following documents:

1. IRB Application format
2. Data Form and Questionnaire
3. Proforma
4. Cvs of Drs. Prathap Tharyan and Abhinav
5. No. of documents 1 - 4

The following Institutional Review Board (Blue, Research & Ethics Committee) members were present at the meeting held on November 10th 2015 in the CREST/SACN Conference Room, Christian Medical College, Bagayam, Vellore 632002.

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We approve the project to be conducted as presented.

Kindly provide the total number of patients enrolled in your study and the total number of withdrawals for the study entitled: "The prevalence and determinants of job stress, job satisfaction and burnout in medical and surgical faculty of a teaching hospital in south India: a cross – sectional follow –up survey" on a monthly basis. Please send copies of this to the Research Office (research@cmcvellore.ac.in)

Fluid Grant Allocation:

A sum of Rs. 6,950/- INR (Rupees Six thousand nine hundred and fifty Only) will be granted for 1 year.

Yours sincerely

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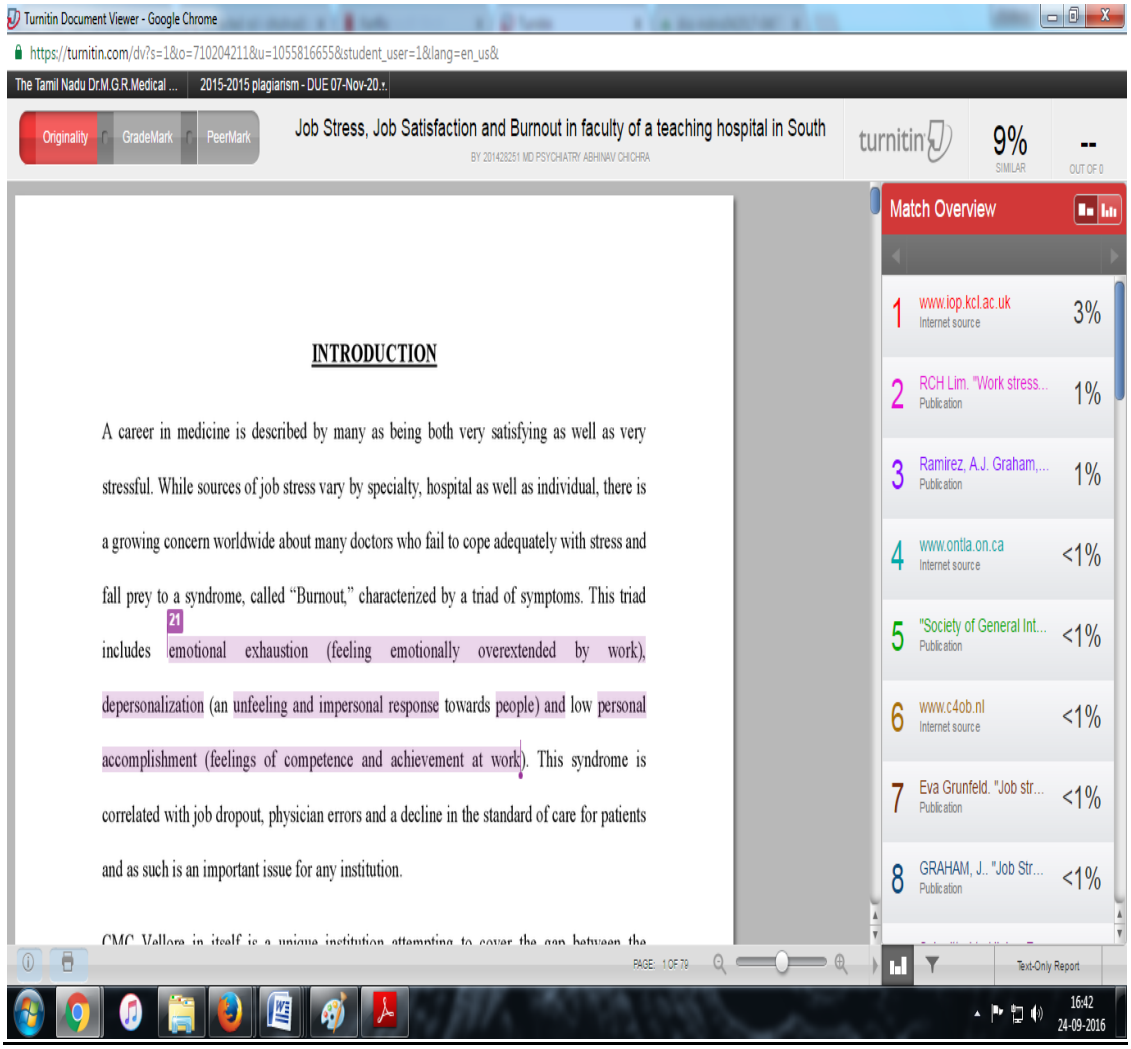

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INTRODUCTION

A career in medicine is described by many as being both very satisfying as well as very stressful. While sources of job stress vary by specialty, hospital as well as individual, there is a growing concern worldwide about many doctors who fail to cope adequately with stress and fall prey to a syndrome, called "Burnout," characterized by a triad of symptoms. This triad includes emotional exhaustion (feeling emotionally overextended by work), depersonalization (an unfeeling and impersonal response towards people) and low personal accomplishment (feelings of competence and achievement at work). This syndrome is correlated with job dropout, physician errors and a decline in the standard of care for patients and as such is an important issue for any institution.

CMC Vellore in itself is a unique institution attempting to cover the gap between the corporate and the government sector in healthcare with a commitment to patient care at affordable costs while providing a centre for world class research and academic excellence. This fosters an environment with unique stressors and sources of satisfaction. A key to any institution's health is the satisfaction of its employees and the model of healthcare practiced by CMC would not be possible without a steady stream of new recruits and committed permanent faculty.

The institution has its own unique environment, with most of the faculty staying within residential facilities provided by the institution. The fact that it is a Christian institution with a strong commitment to spiritual values and that it has doctors as well as patients from around the country also make for a unique mix. It has a high load of clinical as well as non-clinical work with 1.9 million outpatients, 120,000 inpatients and outreach programmes to 340,000 people; along with 25,635 laboratory tests done

daily (based on statistics from the year 2010/2011 as given on the CMC, Vellore official website). Being an educational institute, the faculty are also expected to contribute to research with the institution publishing the third largest number of medical research papers annually in India. How much the components of this mix of high work load, protected housing, spiritual values and comparatively lower salaries affect the levels of stress, satisfaction, mental health and burnout in the faculty is something we were interested in studying.

In view of this, we felt it was important to evaluate the prevalence as well as sources of job stress and satisfaction as well as prevalence of the burnout syndrome in CMC, and the potential modifying effect of spirituality as a motivating factor, as it would enable us to better understand and cater to the needs of our doctors which could in turn translate to a more satisfied workforce providing better patient care.

The study was considered particularly relevant to a faith based institution like Christian Medical College with its position as a tertiary care referral centre with a mission to provide affordable, quality healthcare to people, though in the absence of any Government funding for its running expenses. This unique situation of being dependant on generating revenue for its functioning while attempting to reduce the costs of care and resisting the trends of corporatization currently prevalent in our country makes Christian Medical College and Hospital a unique work environment. It may be postulated that in the current scenario of an overloaded public health system, private hospitals like CMCH that attempt to bridge the gap between free Government health services and prohibitively expensive corporate hospitals are even more relevant than ever before; and so are indicators of the health of such institutions, like levels of job stress, job satisfaction and burnout.

REVIEW OF LITERATURE

Job Stress in the Medical Profession

Common definitions of stress define the term as an "undue, inappropriate or exaggerated response to a situation." (1) The implication has been that this is a universally negative experience as opposed to psychological responses that can be negative or positive depending on the context, like anxiety. Job stress has been associated with higher psychiatric (2) as well as medical morbidity and mortality (3,4). It has also been associated with job dissatisfaction (4), poor productivity and decreased quality of output (5). The concept of job stress and its growing importance in both economic and psychological terms triggered off the rise of the branch of occupational psychology.

The most common model used to understand the concept of job stress was provided by Karesk when he talked about job strain being inherent in situations with a "demand-control imbalance" where jobs that combine high demands with little or no power to control or alter the situation become stressful (6). Other important models are an "effort-reward imbalance" in jobs that require tremendous effort with little or no tangible gain and promoting occupational ill health (7). Subsequently, the importance of support provided to the employee in the work environment also became viewed as an important contributor with "demand-support" imbalance coming to be seen as, perhaps the most draining combination of all these factors, with studies linking this model to cardio-vascular morbidity in particular (8).

Job stress in general, as well as in doctors has been linked with both physical and psychological wellbeing. A study of occupational stress in the National Health Service (9) found about 27% of respondents showed signs of a psychological co-

morbidity, a value that was significantly higher than the 17% rate found in a survey of general British households earlier (10). Another large study looking at 1133 consultants in the United Kingdom (11) found 27% had psychiatric morbidity with higher levels of job stress and lower satisfaction predicting psychological distress. A survey of doctors at varying levels of seniority in Canada also found significantly higher levels of depression and other psychological co morbidity in doctors compared to the general population (12). Other studies report rates of psychological distress to be as high as 50% with depression in 28% of surveyed doctors (13). Job stress has thus been conclusively shown to increase rates of psychiatric conditions like depression and anxiety in medical professionals(11,14–16).

Another cause of concern is suicide in the medical community. This has been a topic of interest since the 1960s, but multiple studies have shown contradictory findings. While earlier studies showed an unambiguous increase in the risk of suicide in doctors as compared to the general population with significantly higher risks in women (16–19), some later researchers concluded that the earlier conclusions were biased, and that doctors were not at increased rates of suicide (20,21). A study done in Australia using the Queensland death registry (22) in fact showed lower rates of suicide in male physicians compared to general population, with comparable rates in females.

However, a meta-analysis of literature on this topic showed a risk ratio for suicide of 1.4 in male physicians and 2.27 in female physicians (23). The difference in gender however was considered suspect with a publication bias due to the earlier sensationalisation of suicide in female doctors being postulated as the cause of it.

Newer studies including one from Norway (24), however hint at a decrease in suicidal feelings in doctors, with postulates that this maybe due to reform at the workplace. Data from the United Kingdom also shows a gradual decline in suicide rates in doctors as compared to other professions (25). A recent study from Brazil (26) also showed no increase in suicide rates in doctors as compared to general population.

Job stress is not only linked with psychological morbidity. Physical illness as well as morbidity has been shown to increase with increasing levels of job stress. A study in Germany on medical personnel and allied health staff found that work related injuries and accidents showed a significant relationship with number of hours worked over the week. Physicians working more than 48 hours per week and exhibiting signs of increased stress also had an increased number of road traffic accidents in the twelve month period prior to that (27). High levels of job stress and an effort-reward imbalance at work have been linked to an increase in lipid levels, as well as an increase in cardiovascular mortality with effect sizes ranging from two to four fold increase in risk of cardiovascular mortality(8,28,29)

Determinants of Job Stress

Keeping these factors in mind, the importance of studying levels as well as determinants of job stress in the medical profession cannot be overstated. Job stress above threshold levels is found more commonly among doctors as compared to members of the general population (30,31). There are many factors commonly cited as the reason for these high levels of stress: organizational structure, working hours, pay structure, interpersonal problems, personality types and patient interactions (32–34). With regard to the models of job stress discussed above, it is the "demand-support" imbalance that is perhaps the most important contributor to job stress in

modern medicine as doctors are increasingly being called upon to fulfil multiple roles with an increasingly educated and aware patient population, with correspondingly poor sources of organizational and formal psychosocial support (1,30,35). While many of the reasons for job stress such as dealing with bereaved relatives, making potentially harmful decisions or unpredictability of work environment are inherent in the profession, studies have shown that multiple modifiable factors play an important role to exacerbation of job stress in doctors (36), implying that this need not be as prominent a factor as it has been over the decades. Specific sources of stress indentified include the lengthy training process, continuous and ongoing evaluation, poor financial remuneration, administrative bottlenecks, inadequate workforce, inadequate facilities and insufficient opportunities to advance (1,14).Job stress also varies across levels of seniority in the medical profession, which is perhaps inherent in the hierarchical structure of the profession, especially in academic institutions. Most studies show job stress to be higher in residents, with markedly different factors considered important as causes of this job stress, from fatigue to housing facilities and financial difficulties (37–40).

Sources of Job Stress in the medical profession

Various studies done at centres around the world have attempted to look at the magnitude of the problem of job stress in doctors. The most common figure quoted in respect to above threshold rates of stress in doctors is around 30% as opposed to 18-20 % in the general population (41). However, individual studies have found higher levels of stress with one large scale postal survey in the United Kingdom reporting 47% of surveyed doctors exhibited signs that indicated high levels of stress (42).

Roles and designation

While earlier studies on levels of job stress found a higher level of stress in residents with reducing stress with increasing seniority (12), later studies found the trend to be changing with consultants reporting higher stress levels as well as psychological distress. Kapur et al did a large multi centre cross sectional survey in 1995-1996 (43) in the wake of nation-wide hospital reforms in the United Kingdom. They found that consultants reported higher stress and higher workplace demands. The study proposed that increasing focus on stress levels in junior doctors with reforms aimed at limiting work hours and reducing workplace demands on residents has inevitably resulted in a rise in stress as well as workplace demand for consultants. However, as job satisfaction continued to be higher in consultants, they may have more resources to deal with increasing workload.

Age

Age as a predictor of job stress has been studied in multiple studies. The majority of studies, including a large nationwide survey of stress levels in doctors in Canada (12), a Korean study looking at general practitioners (44) as well as one looking at stress in doctors and nurses in Mongolia (45) found decreasing levels of job stress with age. This was despite the fact that work load was inconsistently seen to increase with age in these studies. Other studies have however not found any significant difference in job stress across different ages (46,47), with some in fact showing increasing levels of stress with age (43).

Other sources

Simpson et al in 1991 (34) formulated four domains of causes of job stress in doctors: patient relationships, business or financial concerns, time management and concerns about personal competence. They also found that the relevance of these sources

tended to change with time with junior doctors citing concerns about competence as a concern much more frequently than more senior and experienced practitioners.

A study in England looking at job stress and satisfaction in physicians as well as nurses found many significant sources of job stress in doctors (48). These ranged from more individual concerns of patient interactions with demanding and aggressive patients, a difficulty in maintain balance between work and personal life, a feeling of having too much to do in too short a time; to larger, structural problems of feeling undervalued, problems dealing with administrative staff, a lack of resources and having to deal with administrative tasks.

Studies also find a feeling among doctors that things are changing for the worse, with increasing workload, increasing paperwork and increasingly demanding and hostile patients being the most important sources of stress in a study amongst general practitioners in Scotland (49).

Time pressure in terms of long working hours and difficulty in providing adequate time to each patient was also found as the commonest source of job stress among practitioners in a study done in urban centres in Australia by Schattner et al in 1997 (50). The study also found that the stressor described as "most severe" by practitioners was the threat of litigation. Significantly, it found that more than half the practitioners included in the study had contemplated giving up their practice due to occupational stress.

A study by Tattersall et al (51) found that particulars of medical work like dimensions of dealing with social pressure, hostile interactions with patients, a difficult or prolonged diagnostic process, perceived lack of professional knowledge as well as

poor support and contact with colleagues resulted in higher levels of job stress and psychological co-morbidity.

A closer look at these sources would reveal that they can indeed be clustered into two groups of high demands (physical, emotional, workload) and low resources (attention, support, organizational resources) or low reward (hostile patients, uncooperative staff) as was indeed done by a review of the literature on this topic by Dollard et al (36).

While most studies seen above continue to find that the "demand-support" model of job stress is the easiest approach to conceptualising job stress in doctors; a few studies like a large scale study on HMO practitioners in the United States found that perceived levels of control of job and work environment related variables related with stress, satisfaction as well as a sense of commitment to the organization (52). This perfectly illustrates Karesk's model of a "demand-control" imbalance as the cause of job stress.

However, not all demands seem to be equally contributory for increasing stress. Rutter et al, in a review of literature relating to stress in doctors as well as dentists found no evidence that doctors who have teaching responsibilities in addition to other work exhibited higher levels of stress, with few studies showing a reduction in stress levels in those who teach (53). A modifying effect of higher levels of job satisfaction and a feeling of personal achievement could explain this finding.

Gender

Another important factor that seems to influence levels of job stress is gender. Studies done in various settings, including a Chinese study of physicians found higher levels of job stress in female doctors (54). Classically, many smaller studies found both

higher levels of job stress as well as variance in sources of job stress in male and female doctors (55,56). Studies have shown that while male physicians perceive an inability to treat patients, difficulties in their relationships with their patients and threats of malpractice. Female physicians report higher levels of stress due to responsibilities at work (55).A study done in Denmark found female physicians to have more than twice the risk of daily stress with higher reports rates of decreased control at work, higher rates of complaints of inadequate time for oneself and multiple conflicts between roles in the family and job spheres (57). A review of literature in both Scandinavian countries and English found higher rates of reported job stress in female physicians (58). Higher reports of job related stress also inevitably lead to higher rates of psychological and physical distress as seen earlier. Thus, female physicians have been found to have a higher incidence of depression and are found to be more at risk for suicide in the same review of Scandinavian and English literature (58). Other studies have also found a higher rate of serious psychological morbidities like suicide attempts as well as completed suicide (58). A study on health providers in the National Health Services in the United Kingdom found higher rates of minor health problems, both physical as well as psychological, in female physicians with increased job stress being one of the possible etiological reasons proposed for these differences (9).An extensive survey in Norway that looked at 9266 physicians found significantly higher rates of minor health problems and psychological distress in female physicians (59). A study in Germany that looked at rates of accidents, both at work as well as outside, found higher rates in female doctors (27). There is however, some amount of discrepancy about the importance of gender as a variable influencing job stress. Various studies have shown no significant differences between male and female doctors in terms of levels of job stress (34,47). Other studies have found

similar overall stress levels but differences in the source for this stress with problems in balancing work and home and balancing personal achievement with other expectations being more significant sources of stress in females (46). Other studies have found contradictory data with female doctors being more satisfied and less stressed than their male counterparts (49,60). A review by Gross et al (61) of various studies and discrepancies in the role of gender finally concluded that methodology of these studies may be an important contributor in these differences in results. The study reports that studies that used open ended questions tended to show differences in job stress by gender while those using structured forms did not. The review further postulates that as structured questionnaires were usually made initially by all male teams and tested in populations with a male preponderance, they were not geared towards picking up factors of job stress unique to female doctors.

Marital status

Marriage may also be an important modifier of job stress. Difficulties in adjusting demands of home with demands at work has been consistently seen to be a source of stress in doctors (31,62,63). This may also have a differential effect based on gender, with imbalance between work and home life being a more important source of stress for females than males (63), perhaps as females continue to be expected to be more involved in domestic activities than their male counterparts.

Secular trends

Perhaps most worryingly, levels of job stress that had remained stable for many decades may be on an upward trend around the world. A large survey in Canada in 1988 showed dramatically raised levels of job stress among doctors and raised the spectre of a ‘dispirited profession’ (64). This study, among others, led to increasing

efforts to an increasingly evident trend. Whether these efforts have been successful is, however, up for debate. A study in Canada quotes 48% of doctors stating that their workload had increased in the past year (65). A large study analysing responses from around 7300 physicians in the United States in 2011 found significantly high rates of stress and dissatisfaction with work in their sample as compared to the general population (31). This has implications at multiple levels, with stressed doctors unwilling or unable to provide best quality healthcare, with increasing incidence of unintentional errors and finally increasing rates of drop out from a field they have years of training in (66).

Indian Studies

The Indian scenario is marked by a paucity of research in this area. Broadly, trends of job stress seem similar to studies done in the West (67). However, in keeping with the vast and varied social differences between India and the West, some studies have pointed to important differences in the sources of job stress in Indian physicians as compared to their Western counterparts. A small study comparing job stress in nurses as well as doctors in Norway and India found that feelings of inadequate control over their job was a much more important cause of stress in Indian doctors as compared to the doctors surveyed in Norway (68). Interestingly, in contrast to Western data, there are more studies in India about job stress levels in residency training than at the consultant level. The 'demand-support' model of job stress was studied in India as well by Krishna et al (69)who found that increasing levels of social support predicted lesser job stress and overall wellbeing in doctors. A study among 930 resident doctors in medical colleges in Delhi found significantly high levels of job stress with around 33% of the sample showing significant job stress, though most were characterised as mild (70). Sources of job stress were primarily long working hours, financial

constraints and conflicts between work and home. However, overall, few studies have been done in India on job stress in doctors, among them most have looked at medical students (71), with a few studies (like the one referenced above) looking at residents with hardly any studies on consultants.

Burnout

"Burnout" as a term is something that people are now increasingly familiar with.

The most common definition used for this term was provided by Christina Maslach and defines it as "a psychological response to chronic interpersonal job stressors, characterized by overwhelming exhaustion, feelings of cynicism and detachment from the job" (72).

The roots of this term itself lie in popular, lay nosology far before it entered the realm of psychology and occupational health. From these early roots however, burnout has evolved into a well-recognized and documented clinical syndrome seen across cultures. A recent review estimates that over 6000 books, chapters, dissertations and journal articles have been published on this subject (73). The term was arguably first used by Graham Greene in his novel "A Burn-Out Case", published in 1961.

Burnout entered the realm of scientific study in 1974 when Freudenberger published his ground-breaking article entitled "Staff-Burnout" (74). He wrote the paper primarily to relate his experiences working in various free clinics in urban areas of the United States, as well as his own personal experiences of what he himself would term "burnout". Freudenberger describes himself as suffering from " a lingering cold, fatigue and a constant irritability" (75). He used his notes of this experience to define burnout as "to fail, wear out, or become exhausted by making excessive demand on energy, strength, or resources'' (74), thus espousing in essence, the "demand-

resource" model of stress. The article introduced the term burnout from popular psychology to more scientific and systematized study, though in itself it merely spoke of personal experience and did not come up with a valid theoretical construct of the syndrome.

After Freudenberger, further study into this area was carried out by Christina Maslach, a professor of psychology in University of California, Berkeley. Maslach started studying the experiences of her colleagues, especially those dealing with difficult clients on a regular basis. These formed the basis of her first article on the subject, "Burned-Out" (75). Maslach continued working on the subject, enlarging the field of her enquiry into other professions that had frequent emotionally draining people interactions, or were service providers. This including poverty lawyers, prison officers, psychiatrists, clinical psychologists, social workers and child care workers. She collected questionnaire data from these professionals and found a strikingly similar pattern of emotional experiences across professions. Maslach described professionals in these fields suppressing negative emotions relating to work and their clients. Some of these professionals in this negative emotional state went on to 'detach' themselves from the people they were interacting with daily, a process of 'objectification' of their clients as a means of handling their distress more easily (73). In further study, Maslach described the characteristics of the client that could predispose to this negative emotional state (76). She described clients who had a poor prognosis, had severe or difficult problems, or those who may have some personal relevance to their service providers as the most likely to lead to the syndrome of burnout in professionals. Maslach continued to widen the field of her research, finding similar symptoms in a variety of professions. She also spoke of the important of motivation and its subsequent loss being a prime cause for the evolution of the

burnout syndrome. Thus, the initial studies into this subject were primarily qualitative in nature, concerning themselves more with the identification and description of an emerging pattern that was being seen in various situations.

It was the article "The Measurement of Experienced Burnout" published by Maslach and her colleague Jackson in 1981(77) that finally established a quantifiable basis as well as a well defined construct to the syndrome of burnout. The article identified three key aspects of the syndrome of burnout. The first of these was an increasing feeling of emotional exhaustion. The second concerned feelings of cynicism, decreased empathy and the objectification process towards the client discussed earlier. This was termed 'depersonalization'. The third aspect of this syndrome regarded the service provider's evaluation and feeling of self with an increasing tendency to think negatively of oneself and one's work. This was termed 'lack of personal accomplishment'. The article introduced an instrument to be used to quantify burnout across these three domains, called the 'Maslach Burnout Inventory'. The inventory was made using the author's interview data and other information collected from questionnaires from a sample of 605 people across various health and service providing occupations. Maslach and Jackson followed this article up with the publication of a manual for administration as well as properties of the Maslach Burnout Inventory. This manual has been considered a major breakthrough in the history of burnout as a construct. It established the validity of the construct as well as providing a measure of reliability in identifying it and distinguishing it from other entities (73).

Other instruments to measure the syndrome have also been developed. Some like the Bergen Burnout Inventory (78) looked at similar dimensions as those marked out in the MBI(Maslach Burnout Inventory) with a focus on fewer questions, making it

easier to administer. Other instruments however, focussed on domains of exhaustion, with Shirom-Melamed Burnout Measure differentiating between aspects of emotional, physical and cognitive exhaustion (79). The Copenhagen Burnout Inventory also looks at primarily exhaustion as a predictor of the burnout syndrome, differentiating it into physical and psychological domains(80). Other instruments have added dimensions of indolence, guilt as well as a specialised scale to test interpersonal strain to the measurement of burnout (81,82).

The Maslach Burnout Inventory, however, continues to be the most widely used instrument for clinical as well as research purposes. In view of the increasing interest in the subject of burnout across specialties, it was modified from its original form as that was only applicable to human service providers and a general survey version was released. The general survey had more occupation neutral question and also changed the specific dimension of depersonalisation as it was considered specific to jobs with frequent interactions with clients. This aspect was widened and termed 'cynicism'. The dimension named personal accomplishment in the original survey was also renamed professional efficacy in an attempt to both broaden the term and make it more job neutral (83).

However quantitative research demanded that the natural form of an inventory like the Maslach Burnout Inventory, that is a spectrum form of the illness be dichotomised into cases and non cases as only by doing this would it be possible to estimate a prevalence of the problem, or begin to empirically experiment with interventions useful for it. Thus, Schaufeli proposed an operationalized criterion for severe burnout based on the criteria for neurasthenia (code F43.8) in the ICD-10 (73). This criterion requires:

- Persistent and increased fatigue or weakness after minimal (mental) effort.
- At least two out of seven distress symptoms such as irritability and inability to relax.
- The absence of other disorders such as mood disorder or anxiety disorder.

In addition, Schaufeli added the caveat that these symptoms should be due to occupational stressors. Using these criteria, cut offs from scores from the Maslach Burnout Inventory were instituted which could be used to differentiate 'severe' burnout from 'mild' burnout. In a similar manner, The Royal Dutch Medical Association issued guidelines for the identification and treatment of stress related disorders where they name burnout as "work related neurasthenia" or "long term loss of occupational role" (73). The Swedish National Board of Health and Welfare added a similar term called "exhaustion disorder" to their national version of the ICD-10, coded as F43.8 (73). The ICD-10 itself mentions the term burnout in it section on 'Problems related to life-management difficulty' and only defines it as 'state of vital exhaustion'. The DSM-5 however makes no mention of the construct.

A later addition to the concept of burnout has been the definition of an opposite term called 'engagement'. Engagement as a concept was a term used to describe a state that was diametrically opposite to that seen in burnout. Thus it was described as having components of high energy, strong and consistent involvement and a sense of efficacy (84). Alternate descriptions of it have been proposed with engagement looked at as a persistent positive motivational state with components of vigour, dedication and absorption (84). Thus, in the 21st century, the concept of burnout seems to be shifting from the presence of a negative state to the process of erosion of the positive state of 'engagement'.

The prevalence of the burnout syndrome in doctors seems to be higher than in the general population. A large scale study of physicians in the United States looking at 27,276 doctors found that 45.8% of those surveyed showed at least one aspect of the burnout syndrome (31). Levels of burnout however varied considerably across specialities with specialities involved with 'first contact' with patient population like family medicine, internal medicine and emergency medicine showing highest rates of burnout. Pathology, dermatology, general paediatrics and preventive medicine were found to have the lowest levels of burnout. The study also found that doctors were more likely to have symptoms of burnout than the general population. Another study done among family physicians across 12 European countries showed that about 66% of those surveyed scored high for at least one dimension of burnout and 12% scored high in all three (85). Various other studies in countries across the world have estimated burnout rates in doctors to be ranging from 25-33% (86–89).

There is a limited, though increasing, body of literature from India on this subject. A study among 100 members of the Indian Medical Association in North India found extremely low levels of burnout as compared to literature from the West (90). The authors concluded that as most of their samples were working in individual, private practices as opposed to large organizations, such practice with its high levels of autonomy could be protective from burnout.

It is important to understand that burnout is theoretically conceptualised to be on the same spectrum as job stress as is indeed evident by the most commonly used definition for it. Job stress is viewed as both a cause as well as an initial stage which gradually leads to the burnout syndrome. The same models of job stress which were reviewed earlier are seen to be at play in burnout, especially demand-resources and demand-support models (84). The causal links between job stress and burnout have

been looked at in many studies. A study done in the United Kingdom among doctors via postal questionnaires followed up a cohort of doctors for three years in an attempt to see causal links between job stress and the burnout syndrome (14). They found a strong reciprocal causation between job stress and emotional exhaustion as well as lower rates of stress in people showing signs of depersonalisation. Paradoxically, higher personal accomplishment was associated with higher stress as well as higher levels of emotional exhaustion. The conclusion that could be arrived at looking at these results is that while emotional exhaustion may be the earliest correlate to job stress, sustained stress could result in professionals using depersonalisation as a coping mechanism, possibly with deleterious effects on their clinical practice and patient interaction.

A study in New Zealand among various workers in radiation oncology departments across New Zealand found that high rates of organizational stressors were correlated strongly with emotional exhaustion and lower job satisfaction. Patient stressors were however, interestingly, associated with higher job satisfaction (91). Causative and predictive factors for burnout are similar to those seen earlier while reviewing the more general concept of job stress. A recent meta-analysis of 47 papers on the subject identified female gender, single status, low levels of job satisfaction, longer working hours as well as a perceived conflict in work-home duties as consistent predictors for burnout (92). This can however be challenged with a study of burnout in family doctors from the European General Practice Research Network across 12 European countries. It found male sex, younger age and lower job satisfaction to be significantly co-related with burnout (85).

When looking at causal factors for burnout in the medical profession, one can look at organizational factors, and personal or individual factors. Multiple years of research

have documented some consistently identified organizational factors that increase the prevalence of burnout. These may be organized into six primary domains of workload, reward, control, fairness, community and values (72,84,93). Looking at these factors one can clearly see the contribution of the various models of job stress like the first three domains, that reflect the "demand-control" model or others that reflect the "demand-reward" as well as the "demand-support" model.

In a recent overview of the concept of burnout, Maslach et al look at all of these domains in detail and describes the pathways of evolution of burnout due to these factors (84). They describe how increasing workload leads to a chronic state of limited opportunities for rest, renewal and relaxation an depletes the ability of professionals to meet the demands of their job, something borne out by multiple studies (94–96) across multiple occupations. A clear link has also been found between feelings of low autonomy, poor control over the demands of the workplace and burnout (97). The links between inconsistent or scanty reward and declining enthusiasm or efficacy are indeed self-evident, as these are the very principles that underlie the entire field of behavioural psychology. The term, 'Community' as a domain, comes directly from the demand-support model of job stress and describes how cohesive and wholesome the workplace environment is felt to be. A hostile environment with no sources of support offered to people working there would lead to decreased avenues for support during times of increasing occupational stress. The domain of fairness basically examined the extent to which decisions made at work are felt to be equitable. It also delves into subjective feelings of respect at the workplace, biases and discrimination. A feeling of lack of cohesion (community) as well as organizational equity (fairness) has been described as predictors of burnout (98,99). The final domain of 'values' talks about the cognitive expectations each employee has

of their workplace and work. A mismatch between organizational and individual values, or a significant mismatch between 'work as the employee wants to do it' and 'work as it is' would lead to an increasing feeling of exhaustion and cynicism with burnout being the result (100,101).

Personality characteristics and individual factors also play an important role in modulating burnout. People who display low levels of 'hardiness'; that is a sense that they have control over events, an openness to change, as well as a ready involvement in daily activities; have been found to have higher rates of burnout (72,102). Other individual factors found to be important have been an external locus of control; that is the attribution of events or achievements to others or to chance; has been shown to increase burnout (72,102,103). Looking at the 'Big Five' factor model of personality, burnout is significantly associated with the 'neuroticism' dimension (72,104,105). 'Type A' personality characterized by urgency, competitiveness and impatience has also been shown to have higher burnout (106), especially in the domain of exhaustion (72).

Job Satisfaction and burnout

Job satisfaction is something that is often studied in tandem with burnout and had been initially assumed to have a protective effect for burnout. This initial assumption has however undergone modifications. Job dissatisfaction and burnout are definitely associated but the direction of this association is unclear. An example of this is a recent survey of job satisfaction and burnout in psychiatrists in New Zealand that found high levels of burnout as well as high levels of satisfaction, though job satisfaction was negatively associated with levels of burnout (107). More recent studies show that dissatisfaction at work may be an outcome of burnout and not the

other way around (108). Sources of job satisfaction in doctors across studies have not only been the absence of factors related to job stress discussed earlier but also the presence of positive qualities like variety, autonomy as well as opportunities for personal development (46,67,109). Job satisfaction has independently been linked with health with clear links between lower levels of satisfaction and higher anxiety as well as depression, and a more modest link with subjective feeling of physical health (60,110).

The reason why burnout as a concept has been a focus of such intense study worldwide is also the outcomes associated with the syndrome of burnout. These outcomes may also be organizational as well as personal. In keeping with the conceptualization of burnout as an extreme manifestation of job stress, many of these outcomes have also earlier been discussed as related to stress, however both the frequency and quality of outcomes seems to change when the threshold of a burnout syndrome is reached.

Effects of burnout on organizations

The organizational outcomes of the burnout syndrome in physicians are varied and are a cause of considerable concern. As seen earlier, job dissatisfaction may be an outcome of burnout (108). As the burnout syndrome evolves and a cynical, exhausted attitude towards work develops, physicians would show less commitment to the organization they work in. This can manifest itself as absenteeism (111–113) with burned out individuals taking more leave from work. This could also manifest as a withdrawal from work. Studies on this subject in doctors have shown that burned out doctors tend to withdraw from patient care, by reducing work hours, increasing administrative work, changing specialities or even retiring (114); thus denying their

professional field their many years of experience and training. The intention to quit medical practice has also been shown to be positively correlated with burnout (114–116).

Even among those who stay, burnout has been shown to affect the quality of work that is put in, as well as patient outcomes. A recent study matched 178 pairs of patients and physicians and found that the depersonalization aspect of burnout predicted lower patient satisfaction as well as a longer post discharge recovery times (117). A study of 115 residents of an Internal medicine programme found that burned out residents reported significantly higher rates of providing at least one type of sub-optimal patient care, at least over the past month(53% vs. 21%; P = 0.004) (118). A survey of 7905 surgeons in the United States looked at co-relation between self-reported major medical errors and the domains of burnout. They found an 11% increase in such errors for every point increase in score on the depersonalization scale of the Maslach Burnout Inventory and a 5% increase per point for an increase in score in the exhaustion domain(119). This subject was looked at in great detail in the Minimizing Error, Maximizing Outcomes study, a three year longitudinal study that looked at relationships between work conditions, physician reactions to these conditions and patient outcomes (120), that found that there was a greater likelihood of poor patient care decisions and sub optimal patient outcomes in burned out and dissatisfied doctors (121).

Burned out doctors may also have a deleterious effect on job quality for those they work with and have regular interactions with. This could be in the form of interpersonal conflict as well as by disruption of routine job tasks of others (84). There is a proposed model of burnout as a ‘social contagion’ that may perpetuate in a workplace through interpersonal interactions. A study of burnout predictors in 1849

intensive care nurses across 12 European countries (122) found a significant amount of 'consensus' about the level of burnout between each intensive care unit. Complaints about burnout in colleagues was an independent, significant contributor for individual variances in burnout scores and perceived burnout complaints by colleagues was an important predictive variable for burnout both at an individual as well as a unit level, thus leading the authors to conclude that burnout was a 'contagious' phenomenon. Another study done among 555 teachers across 100 schools also found that 'perceived collective burnout' was a significant predictor for individual burnout(123). These studies argue that burnout must be viewed as a workplace characteristic rather than an individual or personal one.

Impact of burnout on the individual

Personal or individual outcomes of burnout are often viewed from the prism of health and healthy living. As mentioned earlier, job stress has been found to have an impact on both psychological and physical health. This association becomes stronger and more apparent when one looks at burned out individuals. A study done among 3368 employees in Finland as part of the "Health-2000" study found that a variety of physical illnesses were more common among burned out individuals(64% vs. 54%, $P<.0001$) and also that the prevalence of these illnesses increased along with increase in severity of burnout ($p<.0001$). The illnesses found to be particularly linked were cardiovascular diseases in men and musculoskeletal diseases in women (124). Another study found that the exhaustion domain of burnout was linked the most strongly with cardiovascular disease while cynicism seemed to be correlated with increased gastrointestinal disease (113). The same study also found that burnout was a strong predictor for future illness, both mental and physical. As seen earlier, work stress (with burnout being an extreme manifestation) has been consistently linked

with heart disease. A meta-analysis of the subject found an average 50% increased risk of heart disease among employees with severe occupational stress (29). Another study from Finland looks at the correlates of burnout with specific illnesses. A 10 year prospective follow-up of forest industry employees showed that burnout predicted increased hospitalization for cardiovascular illness (125). A prospective follow-up of 1704 apparently healthy employees found that changes in the level of burnout increased risk of musculoskeletal pain; with no reverse association (i.e. changes in levels of pain did not predict levels of burnout) (126). Other studies have also found that the risks of having a long medically certified leave of absence from work due to sickness was higher in individuals with burnout than others (127).

Burnout and Mental Health

Burnout is well studied and has strong correlations with mental illness. This is most clearly seen in depressive illnesses, anxiety disorders and substance abuse. Multiple studies have shown a strong relation between the burnout syndrome and depression (128–131).The link between burnout and anxiety has also been studied, though not in the same detail as that between depression and burnout. Multiple studies have established this link conclusively (128,132,133). Substance abuse is also commonly seen in people with burnout. A study by Cunradi et al found that employees with burnout had higher risk of alcohol dependence, though the association itself was modest (odds ratio = 1.03; 95% confidence interval [CI] = 1.01- 1.06) (134). Another study among Australian dentists also found a significant association between increasing levels of job stress and hazardous use of alcohol (135). Consistently higher suicide rates in stressful professions like medicine have also been linked with the burnout syndrome and its consequences like depressive disorders and substance abuse (136).

Though literature on the subject of burnout continues to increase, the psychological construct of burnout has come under some criticism. The criticisms start from the initial studies establishing burnout as an entity, arguing that these studies did not screen for existing psychological pathology and may have thus included individuals suffering from other mental illnesses into a seemingly new construct (137). The concept has also been criticized in having a large overlap with depression as an illness, thus limiting its use clinically. Indeed, a survey of 5,575 schoolteachers found that 90% of teachers identified as having burnout met the diagnostic criteria for depression (138). This has been argued against, using both statistical differences in the associations between depression and burnout, biological differences in inflammatory markers as well as contextual factors (127,139). The use of context in burnout, as a syndrome limited to an occupational context has also however come under fire as an arbitrary distinction with no clinical relevance (137). The fact remains however that the occupational context of the symptoms of burnout is precisely what has excited much research in the field as organizations strive to improve efficiency and productivity in the workplace.

Coping with job stress

'Coping strategies' is a term used usually to indicate psychological or behavioural methods used to deal with stress. Various studies have also looked at strategies used by individuals to cope with occupational stress. It has been hoped that implementation of adequate coping strategies could prevent burnout syndrome with its myriad consequences. A qualitative study done using open ended interviews with physicians in Canada found that coping strategies could be divided as those used when in the workplace (talking with co workers, time-out, humour, working through stress) and those used after work time(exercise, time with family). The study also found that

some strategies used by physicians may result in higher stress. These were ‘keeping stress to oneself’, ‘going on as if nothing happened’ and ‘concentrating on what to do next (140). A study done in a teaching hospital in London found that though doctors had significantly high emotional stress, they found it difficult to express psychological distress (141). Doctors in the sample rarely sought formal help for their distress.

A survey of strategies used by hospital consultants to cope with job stress found that alcohol and other substances were being used by a significant number as a coping strategy (142). They also found that those using alcohol for coping had a higher risk of psychological co-morbidity. Like previous studies, this study also found that doctors rarely used formal support services offered at work and found them to be of little use.

Another study done among both residents as well as faculty in Orthopaedic Surgery found that talking to one’s family as well as religion or spiritual beliefs were strategies used that had a positive impact on stress levels (40). They also found that both residents and faculty used cigarettes as well as alcohol as a coping mechanism for stress.

A qualitative study focussing on various positive strategies used by physicians to promote their own wellness found these to be primarily in the domains of ‘relationships’, ‘religion or spirituality’, ‘self care’, ‘work’ and ‘changing approaches to life’ with the last in particular showing an increased score in self ratedwell being(143).

Thus, though literature tends to focus on the various harmful or potentially harmful strategies used for coping with job stress among doctors, the situation may not be so

grim and individuals may be finding their own unique ways to maintain work-rest equilibrium.

Previous work in this institution on job stress, satisfaction and burnout

A study entitled 'The prevalence and determinants of job stress, job satisfaction, coping, burnout, and mental distress, and the effects of empathy and religious or spiritual beliefs, in medical and surgical faculty of a teaching hospital in South India: a cross-sectional survey' was carried out in 2007-2008 in a teaching hospital in South India (144). It was a questionnaire based survey and looked at responses from 345 doctors (80% response from the surveyed sample). The findings of the study were significant for the following results:

- High job stress was reported by 23%. Logistic regression identified having too great an overall volume of work, disruption of home life while on call, inadequate staffing, feeling poorly paid, and difficulties in relationships with colleagues, as contributory. Informal ways of coping were preferred to formal support.
- However, 98% of faculty reported high levels of job satisfaction; deriving intellectual stimulation from teaching and a high level of responsibility were contributory.
- Causes of stress and satisfaction differed by age and gender.
- Significant mental distress was reported by 21%, particularly younger faculty.
- Of the indicators of burnout, high levels of Emotional Exhaustion were evident in 23%, high levels of Depersonalization in 16%, and low levels of

Personal Accomplishment in 22%. However, none scored high on all three indicators of burnout.

- High empathy scores correlated with high scores on Emotional Exhaustion.
- Religious or spiritual beliefs strongly influencing one's attitudes to work were significantly associated with high levels of Personal Accomplishment.
- High scores for mental distress correlated significantly with all indicators of burnout.

The present study uses similar methods and instruments as in the previous study and has a reference base to contextualize its results.

AIMS AND OBJECTIVES

1. To estimate, among medical and surgical faculty of the Christian Medical College, Vellore:
    - The prevalence and sources of job stress and job satisfaction and the ways used to cope with stress;
    - The prevalence of burnout and mental health problems;
    - The influence of age, gender, years of experience, speciality, empathy and religious beliefs on job stress and, satisfaction, burnout, and mental health.

2. To compare these results with those of a similar study done previously among faculty in CMC during 2007-2008

METHODOLOGY

The study was designed as a cross-sectional observational study using standardized self-administered questionnaires. All faculty members of Christian Medical College and Hospital with a designation of Assistant Professor, Associate Professor and Professor in both medical and surgical departments were included in the study. Any faculty member who was on sabbatical, extended leave or who did not give consent for the study was not included in the study.

The study was presented to the Institutional Review Board and was cleared by it prior to data collection.

The study was carried out from December 2015 to July 2016. Questionnaires were made available in both written as well as digital formats. A written and informed consent was taken from all participants of the study. To maintain anonymity, each participant received an envelope in which to put their completed questionnaire following which the form could be given to the office secretary of the concerned department. The forms were then picked up by the investigator from the secretary directly without direct contact with the faculty member who had filled up the form. Digital forms were also made available in the form of Microsoft Word documents with interactive tabs which could be used to fill in data. These forms were distributed via each departments office email account. Responses were sent to the concerned department's office email account which then emailed only the downloaded document to the principal investigator, thus ensuring anonymity. Digital forms were made available primarily to increase response rates as well as to make filling the forms as convenient as possible.

Data entry was handled by the investigator and all written forms as well as digital forms were stored with the investigator.

The outcome variables looked at in the study were:

1. Self-rated levels of Job stress
2. Self-rated sources of job stress
3. Self-rated levels of Job satisfaction
4. Self-rated sources of job satisfaction
5. Rates of psychiatric co-morbidity as assessed by the GHQ 12
6. Self rated empathy
7. Self-rated endorsement of spiritual beliefs influencing one's work

The possible predictor variables or co-relates looked at in the study were:

1. Socio-demographic variables: age, sex, marital status, number of children, post-graduate qualification, department, and years after completing post-graduation
2. Self rated empathy
3. Self-rated endorsement of spiritual beliefs influencing one's work

Data was collected using four standardized questionnaires to measure various outcome or predictor variables. These were:

1. Consultants Job Stress and Satisfaction Questionnaire
2. General Health Questionnaire
3. Jefferson Scale for Physician Empathy
4. Maslach Burnout Inventory

Details of which instrument was used for each variable as well as psychometric properties of each are given below:

Mental health:

The *General Health Questionnaire- 12 (GHQ 12)*(146)is a widely used and reliable screening instrument for psychiatric morbidity in community samples and occupational settings, that rates twelve symptoms of psychiatric morbidity according to whether they have been experienced "not at all", "same as usual", "rather more than usual", or "much more than usual" in the past few weeks. The first two response categories are scored zero and the last two scored one giving a maximum score of 12. A score of four or more is often taken as evidence of possible mental distress from studies that have validated the GHQ(146), especially in English speaking, educated populations; although a lower cut-off is sometimes used in population based studies. In this study, the mean GHQ scores and the cut-off score of 4/12 were used. The GHQ is only a screening instrument and an interview by a mental health professional would be needed to confirm or rule out a psychiatric disorder, so high scores on this instrument is not necessarily an indicator of psychiatric illness.

It has been found to be a reliable and psychometrically sound instrument for use as a screening instrument to detect mental health problems(147,148).

Burnout:

Burnout was measured using the Maslach Burnout Inventory as designed for use in service providers. This widely used tool measures the three components of the burnout syndrome on separate subscales.

a. *Emotional exhaustion (EE)* (feeling emotionally overextended by work) is measured by nine items.

b. *Depersonalisation (DP)* (an unfeeling and impersonal response towards people) is measured by five items.

c. *Personal accomplishment* (*PA*) (feelings of competence and achievement at work) is measured by eight items.

Each job-related feeling/attitude is rated on a 7-point scale according to how often it is experienced, from "never" to "every day". The total score for each subscale is categorized "low", "average", or "high" according to predetermined cut-off scores based on normative data from samples of health professionals. Scores are considered "high" if they are in the upper third of the normative distribution, "average" if they are in the middle third and “low if they are in the lower third.

A high degree of burnout is indicated by high scores on the emotional exhaustion and depersonalization subscales and low scores on the personal accomplishment subscale.

The Maslach Burnout Inventory has been found to have high reliability, validity as well as internal consistency consistently and the three subscales have been shown to have a Cronbach’s alpha value of more than 0.7(77,83,149–151).

Job stress and satisfaction:

The Consultants Job Stress and Satisfaction Questionnaire(152) was used to assess Job stress and satisfaction. It is a questionnaire designed to assess sources of stress and satisfaction. The questionnaire includes 25 specific sources of stress and 17 sources of satisfaction. Each source of stress/satisfaction is rated by clinicians according to the extent it had contributed to the overall stress or satisfaction they had experienced in their work during the previous few months, on a scale of 0 to 3 ("not at all" to "a lot"). Global ratings of stress and satisfaction are obtained by asking

clinicians: "Overall, how stressful/satisfying do you find your work?" on scales of 0 to 4 ("not at all" to "extremely"). A few questions were added to the questionnaire in sources of job stress and sources of job satisfaction, based on our previous work and the current revisions to more comprehensively reflect current contextual issues at CMC such as housing, etc.

Empathy:

Empathy in patient-care situations is a cognitive attribute that involves an ability to understand the patient's inner experiences and perspective and a capability to communicate this understanding. The Jefferson Scale of Physician Empathy (JSPE) was used to measure self rated empathy(153,154). It is a 20-item scale scored in Likert fashion on a 7-point scale (1=strongly disagree, 7=strongly agree). Half the items are reverse scored (7=strongly disagree, 1=strongly agree) and a high total score indicates high empathy. [24] It is the most heavily researched test that is specifically designed for the assessment of physician empathy and has adequate test re-test and inter-rater reliability, validity and internal consistency.

The JSPE Student version was pilot tested on 137 applicants to the medical course in July 2003 (Tharyan 2003; unpublished data) and its vulnerability to motivational distortion assessed by introducing 22 items from the lie scale of the Eysenck Personality Questionnaire (EPQ), that probe personal aspects of one's behaviour. Though lie scores were high in many of the returned questionnaires, the lie scores did not correlate with empathy scores, suggesting that socially desirable responses may not colour empathy-related responses of people

A single sentence worded " My religious or spiritual beliefs strongly influences my approach to my work and patients" was incorporated as the last item in the Jefferson

Scale of Physician Empathy and is to be scored in a similar fashion as the other items in the scale (7 point scale with a higher number denoting greater agreement).

The scale has been shown to have excellent goodness of fit(155) and good reliability and construct validity(156)

To reduce bias, all data was kept confidential and forms were filled anonymously. An attempt was made to minimize direct handing of questionnaires to the principal investigator in order to ensure anonymity. The self-rated questionnaires that were scored have inbuilt mechanisms such as reverse scoring of some items to reduce bias related to previous responses.

Statistical analysis

Data entry was done using EpiData and statistical analysis was done using SPSS-16.All categorical variables were dichotomized, if possible, and analysed with chi-squared or Fischer's exact tests. Odds Ratios and 95% Confidence Intervals (CIs) were computed, where possible. Continuous variables were analysed using independent sample t tests. Analysis of Variance (ANOVA) was used when more than one group's characteristics were being analysed, with post-hoc Bonferroni test for group-wise comparisons, assuming variances were equal. Missing data were not adjusted for in the denominators when frequencies are calculated. Stepwise Logistic Regression (Forward-Likelihood Ratio method) was used to ascertain important sources of stress and satisfaction, as well to evaluate contributors to the components of burnout. Since multiple comparisons were used for the questions on the sources of stress and satisfaction questionnaires, two-tailed p values was set at <0.001 to be considered significant in univariate analyses. For other comparisons, a two-tailed p value of <0.05 was used to assess significance.

Data was compared to a similar study using the same instruments done in Christian Medical College and Hospital in 2007-2008 as this study was planned as a follow up survey to check for any significant changes in levels of job stress, satisfaction or burnout as well as to check if the predictors of these showed any new relationships.

RESULTS

Questionnaires were given to 520 eligible faculty members in the study. The total number of completed forms received was 304, yielding a response rate of 58% of the sample. A few of the forms did not have all fields filled; available data in these forms was used for analysis.

Characteristics of the sample

The 304 participants were from 42 departments in the institution (Table 1). Four participants did not provide the department they worked in.

Of the participants, 175 (58%) were male and 129 (42%) were male, with a mean age of 39 years (range 28 to 59 years) (Table 2). The majority (235; 75.8%) were younger than 45 years of age (mean age: 35.95 years; standard deviation (SD) 4.37); and 68 people (22.4%) were 45 years or older (mean age: 50.72 years; SD 4.45 years). The majority (271; 89%) were married; 26 (8.6%) were single; while four were separated and three had deceased spouses. Most (135; 44%) had two children, many (95; 31.3%) had one child, or no child (71; 23.4%) and a few (3; 1%) had three children.

Assistant Professors (156) comprised the majority (51.3%) of the participants,. There were 71 (23.4%) Associate Professors and 77 (25.3%) were Professors.

The majority of the participants were from clinical departments (248; 81.5%) and among these, 120 (39.5%) were from surgical specialties and 63 (20.7%) were from medical specialties (Table 2). The remainder were from departments providing chronic or palliative care (49; 16.1%) or from non-clinical/ support services (68; 22.4%).

Table 1: Distribution of participants across the 42 departments surveyed*

Department

	Frequency	Percent
Anaesthesia	28	9.2
Anatomy	4	1.3
Biochemistry	7	2.3
Cardiology	6	2.0
Clinical Biochem	2	.7
Community Medicine	7	2.3
Critical Care	6	2.0
Dermatology	4	1.3
Developmental Paed	3	1.0
Endocrine Surgery	4	1.3
ENT	9	3.0
Family Medicine	2	.7
Gastroenterology	4	1.3
Haematology	4	1.3
HLRS	3	1.0
Medical Oncology	3	1.0
Medicine	27	8.9
Microbiology	9	3.0
Neonatology	2	.7
Nephrology	5	1.6
Neurology	3	1.0
OBG	10	3.3
OBG-Oncology	3	1.0
Ophthalmology	7	2.3
Orthopaedics	19	6.2
Paediatric Ortho	1	.3
Paediatric Surgery	3	1.0
Paediatrics	10	3.3
Pathology	15	4.9
Pharmacology	2	.7
Physiology	6	2.0
PMR	6	2.0
Psychiatry	13	4.3
Radiology	21	6.9
Radiotherapy	4	1.3
Reproductive Med	1	.3
Surgery	27	8.9
Thoracic Surgery	3	1.0
Transfuion Medicine	1	.3
Urology	7	2.3
Vascular Surgery	1	.3
Virology	2	.7
Total	300	100.0

*Of the 304 respondents, four did not enter the department they worked in

The participants did not differ significantly in mean age, gender, or years of experience across the four specialties (types of work), nor in the distribution of those above or below forty five years of age (Table 2).

Table 2: Characteristics of participants by type of work (specialties)

Category (N)	**Male (%)**	**Age in years**		**Number of children**		**Years of experience**	
		Mean (SD)	**Range**	**Mean (SD)**	**Range**	**Mean (SD)**	**Range**
Medical (63)	33 (52.4)	38.5 (7.72)	28-59	1.03 (0.8)	0-3	8.32 (7.42)	0-30
Surgical (120)	81 (67.5)	40.73 (6.77)	29 -59	1.43 (0.7)	0-3	10.39 (6.56)	1-30
Chronic care (49)	26 (53.1)	39.65 (7.76)	29- 59	1.27 (0.8)	0-2	9.80 (7.46)	1-27
Non-clinical (67)	34 (50.0)	37.30 (8.30)	28-59	1.06 (0.8)	0- 3	7.99 (7.89)	1-36
Gender (N)	**%**						
Male (175)	57.5	38.87 (7.41)	28-59	1.22 (0.83)	0- 3	8.9 (7.13)	0- 34
Female (128)	42.4	39.80 (7.76)	28-59	1.24 (0.79)	0 -3	9.6 (7.37)	0.2- 32
Total (303)	**100**	**39.32 (7.59)**	**28-59**	**1.23 (0.8)**	**0- 3**	**9.31 (7.25)**	**0-36**

Prevalence and Sources of Job Stress

The ratings on the Job Stress and Satisfaction questionnaire were dichotomized and compared across specialties, genders, and those aged 45 years or less and above 45 years. Overall, 31.6% of all respondents rated themselves as 'stressed', or 'very stressed' (95% CI = 26.6% to 37.0%). Table 3 details the levels of job stress across specialties, age and gender.

Table 3: Level of job stress in respondents by type of work, age, gender and designation

Category	Overall job stress levels		P value
	Nil or a little N (%)	Quite a bit or extreme N (%)	
Speciality			
Medical (N = 63)	42 (66.7)	21 (33.3)	**0.01**
Surgical (N=120)	70 (58.3)	50 (41.7)	
Chronic care (N=49)	39 (79.6)	10 (20.4)	
Non-clinical (N=68)	53 (77.9)	15 (22.1)	
Age			
Younger than 45 years (N = 235)	151 (72.9)	84 (35.7)	**0.05**
45 years or older (N = 68)	56 (27.1)	12(17.6)	
Gender			
Male (N = 175)	119 (68)	56 (32)	0.85
Female (N = 129)	89 (69)	40 (31)	
Designation			
Assistant Professor (N=156)	96(61.5)	60 (38.5)	**0.002**
Associate Professor (N=71)	47(66.2)	24(33.8)	
Professor (N=77)	65(84.4)	12(15.6)	
Total (N =304)	**208 (68.4)**	**96 (31.6)**	

Job stress did not vary significantly with gender (Table 3).Significantly more Assistant Professors (38.5%) rated themselves as "quite a bit or extremely stressed" than Associate Professors (33.8%) or Professors (15.6%). The odds of being stressed versus not stressed in Associate Professors was almost double that of Associate Professors and Professors (Odds Ratio (OR) 1.94; 95% Confidence Interval (CI) 1.19 to 3.19; p = 0.008). The odds of reporting high versus low job stress in Assistant and Associate Professors analysed together was thrice that of Professors (OR 3.18; 95%CI 1.63 to 3.23; p =0.000). The odds of reporting high versus low job stress was those younger than 45 years was twice that of those older than 45 years (OR 2.60; 95% CI 1.32 to 5.12; p = 0.005). Faculty from surgical specialities reported being highly stressed most frequently (41.7%), followed by faculty from acute medical specialities (33.3%), non-clinical specialities (22.1%) and chronic care specialities (20.4%). This difference was statistically significant (p=0.01).

Sources of Job Stress

Table 4 details levels of various sources of stress that considered as "quite a bit or extreme" among all participating faculty, and by gender and by designation (Assistant or Associate Professor versus Professors); and organized under the following heads: Feeling overloaded and its effects on home life; Feeling poorly managed and resourced; Multiple responsibilities and role conflicts; Dealing with patients and relatives; interpersonal conflicts; and overall stress level. The sources of stress identified as significant in univariate analyses for all faculty, and by gender and designation were entered into logistic regression (Stepwise forward likelihood ratio) (Table 5).

Table 4: Sources of job stress reported as "quite a bit or extreme" in all participants and by gender and designation

A. Feeling overloaded and its effect on home life	Overall n(%)	Designation		Gender	
		Assistant / Associate Professor n (%)	Professor n (%)	Male n (%)	Female n (%)
	N=304	(n=227)	(n=77)	(n=175)	(n=129)
1. Disruption of your home life through spending long hours at work.	91 (29.9)	65 (28.6)	23 (33.8)	57 (32.6)	34 (26.4)
2. Disruption of your home life as a result of taking paperwork home.	97 (31.9)	84 (37)	13 (13.4)	47 (26.9)	50 (38.8)**
3. Disruption of your home life as a result of being on call.	74 (24.3)	70 (30.8)	4 (5.2)	39 (22.3)	35 (27.1)
4. Keeping up-to-date with current clinical and research practices.	115 (37.8)	94 (41.4)	21 (27.3)	70 (40)	45 (39.1)
5. Feeling under pressure to meet deadlines.	110 (36.2)	93 (41)	17 (22.1)	49 (28)	61 (47.3)**
6. Having too great an overall volume of work.	89 (29.3)	69 (30.4)	20 (26)	49 (28)	40 (31)**
B. Feeling Poorly Managed and Resourced					
7. Feeling you have insufficient input in to the management of your unit or institution.	71 (23.4)	53 (23.3)	18 (23.4)*	43 (24.6)	28 (39.4)**
8. Having inadequate facilities (e.g. equipment, space) to do your job properly.	126 (41.4)	99 (43.6)*	27 (35.1)	75 (42.9)	51 (39.5)
9. Feeling you are poorly paid for the job you do.	90 (29.6)	78 (34.4)**	12 (15.6)	67 (74.4)**	23 (25.6)
10. Having inadequate staff to do your job properly.	75 (24.7)	56 (24.7)	19 (24.7)	39 (22.3)	36 (27.9)
11. Dealing with the threat of being sued for malpractice.	16 (5.3)	15 (6.6)	1 (1.3)	10 (5.7)	6 (4.7)
12. Feeling that your accumulated skills and expertise are not being put to their best use.	84 (27.6)	68 (30)	16 (20.8)	59 (33.7)	25 (19.4)
13. Uncertainty about the future of your unit/institution	44 (14.5)	38 (16.7)*	6 (7.8)	26 (14.9)**	18 (14)

14. Having inadequate housing facilities	67(22)	59(26)	8(10.4)*	43(24.6)	24(35.8)*
C. Multiple Responsibilities and Role Conflicts					
15. Having to take on more managerial responsibilities	92 (30.3)	67 (29.5)	25 (32.5)	50 (28.6)	42 (32.6)
16. Being responsible for the quality of the work of other staff.	118 (38.8)	89 (39.2)	29 (37.7)*	61 (34.9)	57 (44.2)
17. Having conflicting demands on your time, e.g. Patient care/management / research/college.	148 (48.7)	118 (52)	30 (39)	78 (52.7)	70 (47.3))
18. Having a conflict of responsibilities (e.g. clinical vs. managerial; clinical vs. research).	116 (38.2)	93 (41)	23 (29.9)	55 (31.4)	52.6 (47.3)*
19. Being responsible for the welfare of other staff	42 (13.8)	26 (11.5)	16 (20.8)	21 (12)	21 (16.3)
D. Dealing with patients and relatives					
20. Being involved with the physical suffering of patients	76(25)	60 (26.4)	16 (20.8)*	45 (25.7)*	31 (24)
21. Having to deal with distressed, angry or blaming relatives.	47 (15.5)	40 (17.6)	7 (9.1)	30 (17.1)	17 (13.2)
22. Being involved with the emotional distress of patients.	60 (19.7)	51 (22.5)	9 (11.7)	38 (21.7)	22 (17.1)
E. Interpersonal conflicts					
23. Encountering difficulties in relationship with managers	55 (18.1)	42 (18.5)	13 (16.9)	31 (17.7)	24 (18.6)
24. Encountering difficulties in relationship with colleagues.	73(24)	53(23.3)	20(26) *	45(25.7)	28(21.7)**
25. Encountering difficulties in relationships with administrative staff.	37 (12.2)	31 (13.7)	6 (7.8)	23 (13.1)	14 (10.9)
26. Encountering difficulties in relationships with junior staff	53 (17.4)	45 (19.8)	8 (10.4)	28 (16)	25 (19.4)
27. Overall how Stressful do you find your job?	**96 (31.6)**	**84 (37)**	**12(15.6)**	**56 (32)**	**40 (31)**
** P= <0.001; * P = <0.01 on logistic regression					

Table 5: Sources of stress identified by logistic regression as contributing to reporting job stress as "quite a bit or extreme" in all participants and by gender.

Source of stress	Adjusted Odds Ratios (95% Confidence Interval)
In all participants	
• Disruption of your home life as a result of taking your paper work home.	7.75 (3.57-16.83).
• Being involved with the physical suffering of patients.	5.75 (2.44-13.59).
• Encountering difficulties in relationships with consultant colleagues.	5.31 (2.29-12.34).
• Feeling you have insufficient input into the management of your unit or institute.	4.03 (1.72-9.42).
• Feeling you are poorly paid for the job you do.	3.78 (1.79-7.99).
• Having inadequate housing facilities.	3.28 (1.44-7.45).
• Having inadequate facilities to do your job properly.	2.14 (1.004-4.55).
In Men	
• Disruption of your home life as a result of taking your paperwork home.	11.97 (3.96-36.19)
• Uncertainty over the future funding of your unit/institution.	9.26 (2.02-42.53)
• Having too great an overall volume of work.	6.36 (2.22-18.24)
• Feeling you have insufficient input into the management of your unit or institute.	5.67 (1.82-17.63)
• Being involved with the physical suffering of patients.	4.35 (1.08-17.42)
• Feeling you are poorly paid for the job you do.	3.83 (1.35-10.85)
In Women	
• Encountering difficulties in relationships with consultant colleagues.	7.38 (2.09-25.94)
• Disruption of your home life as a result of taking your paperwork home.	5.83 (1.96-17.27)
• Having inadequate housing facilities.	4.81 (1.31-17.57)
• Feeling you are poorly paid for the job you do.	4.03 (1.12-14.49)
• Feeling you have insufficient input into the management of your unit or institute.	3.78 (1.02-14.01)

Table 5: Sources of stress identified by logistic regression as contributing to reporting job stress as "quite a bit or extreme" by designation

Source of stress	Adjusted Odds Ratios (95% Confidence Interval)
In Assistant and Associate Professors	
• Feeling you are poorly paid for the job you do.	25.13(4.46-141.58).
• Uncertainty about the future of your unit/institution.	7.81(1.46-41.81).
• Having insufficient facilities (equipment space) to do your job properly.	20.23(2.59-157.95).
In Professors	
• Being involved in the physical suffering of patients.	75.83(2.45-2346.7)
• Being responsible for the quality of work of other staff.	53.77(2.08-1388.0)
• Having inadequate housing facilities.	25.46(1.29-500.62)
• Encountering difficulties with consultant colleagues.	19.50(1.54-246.24)
• Feeling you have insufficient input into the management of your unit or institution.	16.52(1.19-229.03).

In univariate analyses, some sources of stress were reported significantly more often by Assistant or Associate Professors as opposed to Professors:

- Disruption of your home life as a result of being on call. (OR 1.38; 95%CI 1.25-1.53)
- Disruption of your home life as a result of taking paperwork home. (OR 1.25; 95%CI 1.11-1.41)
- Feeling you are poorly paid for the job you do. (OR 1.24; 95%CI1.10-1.40)
- Having inadequate housing facilities. (OR1.24; (95%CI 1.10-1.40)
- Feeling under pressure to meet deadlines. (OR 1.22; 95% CI 1.08-1.38)

- Keeping up to date with current clinical or research practices. (OR 1.16; (95%CI1.02-1.31).

Though overall levels of stress were not significantly different between males and females, the following sources of stress were significantly reported more often in females as compared to males:

- Feeling under pressure to meet deadlines. (OR 1.58; 95% CI 1.22-2.04)
- Having a conflict of responsibilities. (OR1.45; (95% CI 1.12-1.87)
- Disruption of your home life as a result of taking paperwork home. (OR 1.35; 95% CI 1.04- 1.75)

The following sources of stress were significantly reported more in males as compared to females:

- Feeling you are poorly paid for the job you do. (OR 1.47; 95% CI 1.23-1.76)
- Feeing that your accumulated skills and expertise are not being put to their best use. (OR 1.33; 95%CI 1.10-1.60)

Strategies for coping with job stress

Details of frequencies of each type of coping strategy used are given in Table 6.

Table 6: Ways used to cope with job stress among participants (N=304)

	Ways of coping	N (%)
A.	**Constructive**	
1.	Taking exercise/playing sport.	177 (58.2)
2.	Talking to colleagues formally, i.e. in a regular support group.	61 (20.1)
3.	Re-organising your work to reduce stress.	151 (49.7)
4.	Pursuing hobbies/leisure activities, e.g.: gardening/ listening to music.	212 (69.7)
5.	Learning techniques for relaxation, e.g. physical relaxation/meditation.	61 (20.1)
6.	Talking to colleagues informally.	195 (64.1)
7.	Talking to your spouse/family/friends.	251 (82.6)
8.	Taking annual leave.	142 (46.7)
B.	**Potentially harmful**	
9.	Smoking cigarettes	21 (6.9)
10.	Working longer hours	38(12.5)
11.	Not eating as healthily as you would wish	55 (18.1)
12.	Drinking alcohol	24 (7.9)
13.	Taking other drugs	3(1)
C.	**Supported Coping**	
14.	Taking prescription drugs	4 (1.3)
15.	Obtaining formal psychological support.	5 (1.6)

The most commonly used strategies were constructive (talking to spouse, talking to colleagues, exercising etc.). However, 141 respondents (46.4% of sample) reported using a coping strategy that could be potentially harmful (working longer hours, eating unhealthily, drinking alcohol etc.). Few people (2.9% of sample) used supported forms of coping like seeking psychological help or using prescription drugs.

While overall there were few significant differences in reported coping strategies among different groups, there were few differences seen according to age:

- Learning techniques for relaxation as a coping strategy was more commonly reported in people older than 45 than those younger (OR 1.94; 95%CI 1.24-3.04)
- Talking to colleagues informally as a coping strategy was more likely to be reported in respondents older than 45 years (OR 1.26, 95% CI 1.07-1.49)
- Taking prescription drugs as a coping strategy was more likely to be reported in respondents older than 45 (OR 10.41 95% CI 1.09-100)

There were a few differences in coping strategies according to gender:

- Respondents reporting smoking cigarettes as a coping strategy were more likely to be male (OR 14.74; 95% CI 2-108.44)
- Respondents reporting not eating healthily as a coping strategy were more likely to be female (OR 2.19; 95%CI1.34-3.59)
- Respondents reporting drinking alcohol as a coping strategy were more likely to be male (OR 5.16; 95%CI 1.57-16.93)

There were no significant differences in coping strategies across designations.

Prevalence and Sources of Job Satisfaction

Table 7 details the levels of job satisfaction by age, gender and designation.

Table 7: Levels of job satisfaction by age, gender and designation

Category	Overall job satisfaction levels		P value
	Not satisfied or little satisfied N (%)	Satisfied or extremely satisfied N (%)	
Speciality			
Medical (N = 63)	13 (20.6)	50 (79.4)	0.08
Surgical (N=120)	44 (36.7)	76 (63.3)	
Chronic care (N=49)	12 (24.5)	37 (75.5)	
Non-clinical (N=68)	17 (25)	51 (75)	
Age			
Younger than 45 years (N = 235)	74 (31.5)	161 (68.5)	**0.04**
45 years or older (N = 68)	13 (19.1)	55(80.9)	
Gender			
Male (N = 175)	55 (31.4)	120 (68.6)	0.20
Female (N = 129)	32 (24.8)	97 (75.2)	
Designation			
Assistant Professor (N=156)	49(31.4)	107 (68.6)	**0.03**
Associate Professor (N=71)	27(38)	44(62)	
Professor (N=77)	11(14.3)	66(85.7)	
Total (N =304)	**87 (28.6)**	**217 (71.4)**	

Of the 304 participants 217 (71.4%; 95% CI 66.1-76.2) were ‘satisfied’ or ‘very satisfied’ with their jobs. Prevalence of satisfaction did not vary by gender or type of work. There was however significant variation in prevalence of job satisfaction between Professors as compared to Assistant or Associate Professors. Respondents

with high satisfaction were more likely to be Professors (OR 1.28; 95%CI 1.13- 1.47). Similarly, faculty older than 45 years had higher prevalence of reported job satisfaction.

Among different designations, the following sources of job satisfaction were reported more in Professors as compared to Assistant or Associate Professors:

- Having a high level of responsibility. (OR1.29; 95% CI 1.13-1.47)
- Being able to bring about positive change in your unit/institution. (OR 1.44; 95%CI= 1.23-1.70)
- Having a high level of autonomy. (OR 1.42; 95%CI= 1.25-1.63)
- Feeling you contribute to development of your profession. (OR 1.21; 95% CI= 1.39-1.06)
- Feeling you have a high level of job security. (OR 1.37; 95% CI 1.20-1.56)
- Having adequate housing facilities. (OR 1.22, 95% CI 1.06-1.40)

Table 8 details the sources of job satisfaction by age, gender and designation.

Table 8: Sources of job satisfaction by gender and designation

Domains	Number and % endorsing moderate/high job satisfaction						
	Overall (n = 343)	Age		Gender		Designation	
		<45 y (n=241)	>45 yrs (n=62)	Male (n=175)	Female (n=129)	Assistant /Associate Professor	Professor
A. Feeling well managed and resourced							
1. Feeling you have a high level of job security	219 (72)	165 (68.5)	54 (87.1)	127 (72.6)**	92 (71.3)	155(68.3)	64(83.1)*
2. Feeling your clinical experience is used to the full in the job you do.	210 (69.1)	160 (66.4)	49 (79)	113 (64.6)	97 (75.2)**	156(68.7)	54(70.1)
3. Feeling you have adequate financial resources to do a good job.	179 (58.9)	137 (56.8)	41 (66.1)	104 (59.4)	75 (58.1)	128(56.4)	51(66.2)
4. Having a high level of autonomy.	203 (66.8)	151(62.7)	52 (83.9)	118 (67.4)	85 (65.9)*	137(60.4)	66(85.7)
5. Feeling you have the staff necessary to do a good job.	180 (59.2)	142 (58.9)	38 (61.3)	109 (62.3)	71 (55)	133(58.6)	47(61)
6. Feeling you have adequate facilities to do a good job	232 (76.3)	177 (73.4)	54 (87.1)	132 (75.4)	100 (77.4)	171(75.3)	61(79.2)
7. Having adequate housing facilities	215 (70.7)	159(66)	55 (88.7)	116 (66.3)	99 (76.7)*	152(67)	63(81.8)
B. **Having good relationships with patients, relatives and staff**							
8. Having good relationships with patients.	230 (75.7)	183 (75.9)	47 (75.9)	137 (78.3)	93 (72.1)	172(75.8)	58(75.3)
9. Feeling you deal well with patients' relatives.	207 (68.1)	165 (68.5)	42 (67.7)	112 (64)*	95 (73.6)	157(69.2)	50(64.9)
10. Having good relationships with other staff members.	246 (80.9)	188 (78)	57 (91.9)	138 (78.9)	108 (83.7)	181(79,7)	65(84.4)
C. **Getting professional satisfaction, status and esteem**							
11. Deriving intellectual stimulation from research.	181 (59.5)	193 (80.1)	54 (87.1)	106 (60.6)	75 (58.1)	130(57.3)	51(66.2)
12. Having variety in your job.	222 (73)	174 (72.2)	48 (77.4)	122 (69.7)	100 (77.5)	161(70.9)	61(79.2)
13. Having opportunities for personal learning (developing clinical/research / management skills	225 (74)	176 (73)	49 (79)	130 (74.3)	95 (73.6)	168(74)*	57(74)
14. Being involved in activities, which contribute to the development of your profession	211 (69.4)	154 (63.9)	56 (90.3)	115 (65.7)	96 (74.4)	144(63.4)	67(87)
15. Deriving intellectual stimulation from teaching.	248 (81.6)	167(71)	89 (83)*	142 (81.1)	106 (82.2)	185(81.5)*	63(81.8)
16. Having high level of responsibility.	216 (71.1)	161 (66.8)	55 (88.7)	125 (71.4)*	91 (70.5)	150(66.1)	66(30.6)
17. Being perceived to do the job well by your colleagues.	223 (73.4)	172 (71.4)	50 (80.6)	126 (72)**	97 (75.2)	161(70.9)	62(80.5)**

18. Being able to bring about positive change in your unit/institution.	185 (60.9)	137 (56.8)	48 (77.4)	109 (37.7)	76 (58.9)	124(54.6)	61(79.2)
D. Overall satisfaction with job	**217(71.4)**	**163 (67.6)**	**53 (85.5)**	**120 (68.6)**	**97 (75.2)**	**151(66.5)**	**66(85.7)**
** P= <0.001; * P = <0.01							

Table 9 details the sources of satisfaction identified with logistic regression in faculty analysed be age, gender and designation

Table 9: Sources of satisfaction identified by logistic regression as contributing to reporting high job satisfaction by designation and gender

Source of satisfaction	Adjusted Odds Ratios (95% Confidence intervals)
Assistant Professors	
Feeling you have a high level of job security.	6.19 (2.86-13.39)
Associate Professors	
Deriving intellectual stimulation from teaching.	81.73(9.32-386.41)
Having adequate housing facilities.	69.53 (6.17-782.62).
Feeling your clinical experience is used to the full.	36.68 (2.70-497.27).
Having opportunities for personal learning (developing skills).	15.90 (1.63-154.42).
Professors	
Being perceived to do the job well by your colleagues.	17.67 (3.50-89.14).
Feeling you have a high level of job security.	6.41 (1.02-40.11).
Men	
Feeling you have a high level of job security.	5.46 (2.48-12.03).
Being perceived to do the job well by your colleagues	3.94 (1.69-9.18)
Having a high level of responsibility.	2.95 (1.24-7.01)
Feeling you deal well with relatives.	2.25 (1.002-5.05)
Women	
Feeling your clinical experience is used to the full.	4.90 (1.89-12.71)
Having adequate housing facilities.	3.50 (1.31-9.33)
Having a high level of autonomy.	2.52 (1.002-6.36)

Mental Health as measured by the General Health Questionnaire

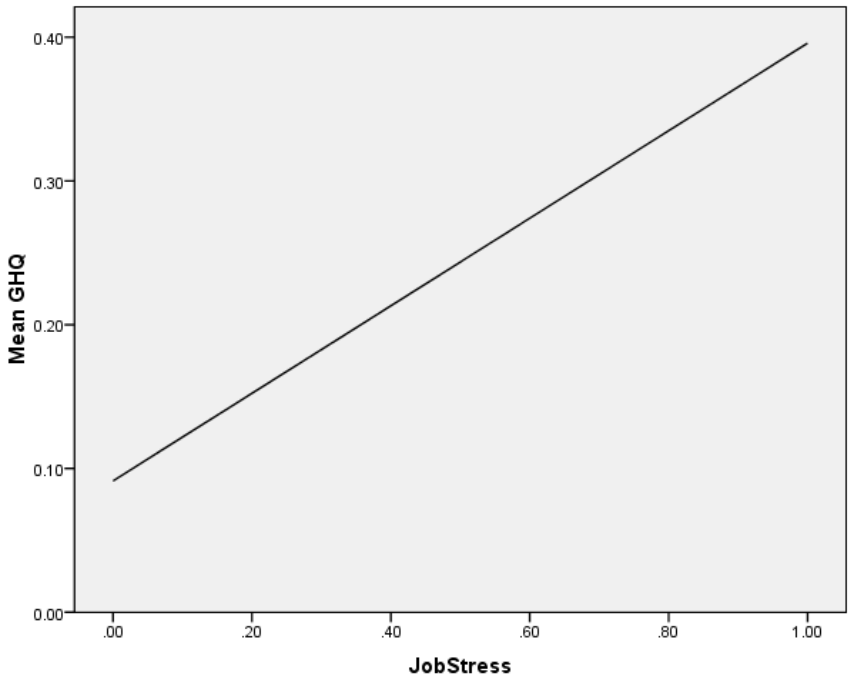
Of the 304 participants, 57 (18.8%; 95% CI 14.8% to 23.5%) of the sample scored higher than the cut-off signifying high mental distress (4 or >) on the General Health Questionnaire (GHQ-12). Table 10 details the prevalence of high and low scores on the GHQ by age, gender, designation and type of work.

Table 10: GHQ scores by gender, age, designation and type of work

Variable(N)		GHQ-12 score	
		<4 or low score, N (%)	**≥4 or high score, N (%)**
Age	<45 years (235)	189 (80.4)	46 (19.6)
	>45 years (68)	57 (83.8)	11 (16.2)
Gender	Male (175)	143 (81.7)	32 (18.3)
	Female (129)	104 (80.6)	25 (19.4)
Speciality	Medical (63)	50 (79.4)	13 (20.6)
	Surgical(120)	91 (75.8)	29 (24.2)
	Chronic/Palliative(49)	44 (89.8)	5 (10.2)
	Non Clinical (68)	58 (85.3)	10 (14.7)
Designation*	Assistant Professor (156)	125 (80.1)	31 (19.9)
	Associate Professor (71)	53 (74.6)	18 (25.4)
	Professor (77)	69 (89.6)	8 (10.4)
Total (304)		**247 (81.2)**	**57 (18.8)**

GHQ-12 scores did not vary significantly by age, gender or type of work. Assistant/Associate Professors had a higher prevalence of significant scores on the GHQ as compared to Professors (OR 2.078; 95% CI 1.03-4.18). GHQ scores also showed a strong, linear relationship with overall stress levels; as shown in Figure 1. People with high GHQ scores also had higher stress levels (Odds ratio of 4.32; 95%CI= 2.64-7.09).

Figure 1:Relationship between Mean GHQ scores and Overall Job Stress



Physician Empathy as measured by the Jefferson Scale for Physician Empathy

The Jefferson Scale for Physician Empathy (JSPE) was administered to all clinicians. As the scale has questions predominantly related to patient care and interactions, it was not administered to doctors in Non-Clinical or Supportive fields. There were 232 respondents to the JSPE. Mean score of JSPE in this population was 108.72 (Standard deviation of 17.74). Table 11 details the mean score of JSPE by age, gender, designation and type of work.

JSPE scores did not vary significantly across age, gender, type of work or designation.

Table 11:Mean scores on the JSPE by age, gender, designation and type of work

Category		JSPE Mean (SD)
Gender	Men (N= 140)	108.7 (19.2)
	Women (N= 92)	108.6 (15.2)
Age	< 45 years (N=175)	107.9 (18.9)
	>45 years (N=57)	111.26 (13.1)
Specialities	Medical (N=63)	111.9 (15.2)
	Surgical (N=122)	107.1 (17.6)
	Chronic Care (N=49)	108.5 (20.7)
Designation	Assistant Professor (113)	106.8 (17.5)
	Associate Professor (56)	109.3 (21.1)
	Professor (63)	111.5 (14.3)
	Total (N=232)	**108.7 (17.7)**

JSPE scores did have significant relations with various sub scales of the Maslach Burnout Inventory, as will be detailed below.

Spiritual Beliefs

Importance of spiritual beliefs in the individual was assessed by adding a single statement of 'My religious or spiritual beliefs strongly influence my work' which was rated on a Likert Scale from 1-7. The score was then dichotomized into 'Agree' or 'Disagree'.

300 respondents answered this question; data was missing in 4 forms. 175 (57.6%) of the faculty agreed that their spiritual or religious beliefs strongly influenced their work.

Significantly fewer Assistant Professors (49.4%) compared to Associate Professors (72.7%) or Professors (57.6%) endorsed this statement (p = 0.003).

Significant variations in the answer were found according to age, designation, gender and type of work.

Significantly fewer doctors from Chronic/Palliative care specialities (44.1%) and Non-clinical/Support specialities (53.1 %) agreed with the statement compared to faculty from Surgical specialities (62.5%) and Medical specialties 65.1%) (p = 0.044).

Women (64.3%) endorsed this statement more frequently than men (64.3% versus 52.6%; OR 1.63; 95%CI= 1.02 to 2.60; p = 0.04). More faculty older than 45 years endorsed this statement than those younger than 45 years (77.9% versus 55.5%; OR 3.33; 95% CI=1.78 to 6.24; p = 0.000).

However, endorsing or not endorsing spiritual beliefs as influencing ones' work did not influence levels of job stress, job satisfaction or scores on the General Health Questionnaire.

Burnout

Burnout was measured using the Maslach Burnout Inventory (MBI) which has three subscales of Emotional Exhaustion, Depersonalization and Personal Achievement. . Table 12 details the mean scores across subscales in participants by specialty, age, gender, marital status and designation.

Table 12: Mean scores on the Maslach Burnout Inventory (MBI) by specialty gender, age, and marital status				
Variables	**Category**	**Number**	**Mean**	**Standard Deviation**
Emotional Exhaustion (EE)				
Specialty	Medical	63	19.37	12.29
	Surgical	120	20.23	12.49
	Chronic care	49	19.84	11.43
	Non-clinical	67	17.94	12.24
Gender	Male	207	18.75	12.6
	Female	126	20.44	11.4
Age$	< 45 years	234	20.50	11.92
	45 years or more	68	15.94	12.30
Marital status	Married	277	19.48	12.10
	Single	26	19.31	12.66
Designation*	Assistant Professor	156	20.60	11.76
	Associate Professor	**71**	21.31	13.10
	Professor	**76**	15.43	11.14
Emotional Exhaustion (EE) Sub-scale: Total		**303**	**19.47**	**12.13**
Depersonalization (DP)				
Speciality	Medical	63	7.71	6.05
	Surgical	120	8.98	6.46
	Chronic care	49	8.51	4.73
	Non Clinical	67	5.28	5.16
Gender	Male	175	8.21	6.12
	Female	125	7.30	5.76
Age	< 45 years	234	8.19	6.15
	45 years or more	68	6.81	5.14
Marital status	Married	277	7.73	5.80
	Single	26	8.96	7.68
Designation	Assistant Professor	156	8.54	6.49
	Associate Proffessor	71	7.73	5.98
	Professor	76	6.46	4.55
Depersonalization (DP) Sub-scale: Total		**303**	**7.83**	**5.98**
Personal Accomplishment (PA)				
Specialties	Medical	63	33.86	8.32
	Surgical	120	32.99	8.49
	Chronic care	49	35.61	7.59
	Non-clinical	67	31.34	8.75
Gender	Male	175	33.09	8.60
	Female	128	33.25	8.26

Age$$	< 45 years	234	32.47	8.6
	45 years or more	68	35.98	7.11
Marital status	Married	277	33.42	8.13
	Single	76	30.38	11.11
Designation**	Assistant Professor	156	32.24	8.78
	Associate Professor	71	32.56	8.26
	Professor	76	35.61	7.49
Personal Accomplishment Sub-scale: Total		**303**	**33.16**	**8.45**

$ P = 0.002; $$ P = 0.020; *P=0.002; **P=0.016 (non-parametric tests)

Mean scores on the EE, DP and PA subscales were also analysed by using the independent samples Kruskal-Wallis test for multiple groups and Independent-Samples Mann Whitney U Test since data was skewed. Mean scores differed significantly among those above and below 45 years and by designation for the EE and PA subscales only. No significant differences were evident for gender or marital status.

The total MBI scores for EE, DP and PA were also categorised according to the range of scores on each domain based on sample score ranges provided on page 6 of the MBI manual.

Of the 303 faculty members who provided data on the MBI, 88 (29%) scored high on the EE subscale, 63 (20.8%) scored high on the DP subscale and 90 (29.7%) had low PA scores. Also, 58 (19.1%) of the sample scored high on two or more domains of the Burnout Inventory, and 3 (0.9%) scored high on all three domains of the MBI. Table 13 details the distribution of those with High EE, High DP and Low PA across speciality, age, gender, marital status and designation.

Table 13:Scores on MBI subscales categorized by speciality, age, gender, marital status and designation

Category		High EE	High DP	Low PA
Speciality	Medical (N=63)	19 (30.2)	12 (19)*	17 (27)*
	Surgical (N=120)	37 (30.8)	34 (28.3)*	43 (35.8)*
	Chronic care (N=49)	12 (24.5)	9 (18.4)*	18 (36.7)*
	Non-Clinical (N=67)	20 (29.9)	7 (10.4)*	12 (17.9)*
Age	< 45 years (N=234)	76 (32.5)*	54 (23.1)	63 (26.9)*
	45 years or > (N=68)	12 (17.6)*	9(13.2)	27 (39.7)*
Gender	Male (N=175)	50 (28.6)	39 (22.3)	53 (30.3)
	Female (N=128)	38 (29.7)	24 (18.8)	37 (28.9)
Marital status	Married (N=277)	81 (29.2)	56 (20.2)	84 (30.3)
	Single (N=26)	7 (26.9)	7 (26.9)	6 (23.1)
Designation	Assistant Professor (N=156)	58 (37.2)**	40 (25.6)*	43 (27.6)
	Associate Professor (N=71)	19 (26.8)**	15 (21.1)*	17 (23.9)
	Professor (N=76)	11 (14.5)**	8 (10.5)*	30 (39.5)
	Total (N=303)	**88 (29)**	**63 (20.8)**	**90 (29.7)**
***p value<0.05; **p value<0.01 Significant differences on chi square test**				

Emotional Exhaustion

88 respondents or 28.9% (95% CI 24% to 34%) of the sample scored high on the Emotional Exhaustion (EE), (Table 13). Scores on the EE subscale varied significantly by designation and age. Type of work, gender and marital status did not significantly affect levels of emotional exhaustion. High EE scores were more likely in Assistant or Associate Professors as compared to Professors (OR 2.34; 95% CI 1.31 to 4.16). Age had a significant relation with EE scores with respondents with high EE scores being more likely to be younger than 45 years (OR1.84; 95% CI 1.06 to 3.17)

Depersonalization

Of the 303 doctors, 63 (20.8%; 95% CI 16.6% to 25.7%) scored high on the Depersonalization (DP) subscale. Scores on the DP subscale varied significantly by designation and type of work. Gender, marital status and age did not significantly affect levels of depersonalization (Table 13) Designation and DP scores were significantly related with respondents with high DP scores being more likely to be Assistant or Associate Professors as compared to Professors (OR 1.63; 95% CI 1.03-2.59). When mean scores were analysed using non parametric tests however, no significant difference was found.

Type of work had a significant relation with high DP scores with Surgical specialities having the highest number of respondents with high DP scores (28.3%) followed by Medical (19.4%), Chronic/Palliative (18.4%) and Non clinical/Supportive (10.4%) fields (P 0.032).

Personal Achievement

Of the 303 doctors, 90 (29.6% ; 95% CI 24.8% to 35.1%) scored low on the Personal Achievement (PA) subscale. Scores on the PA subscale varied significantly by designation, type of work and age. Gender and marital status did not significantly affect levels of personal achievement (Table 13). There were however significant differences in the findings of the direction of the relationship between Personal Achievement and various other variables when analysed by dichotomous cut of scores by chi square tests as opposed to comparing mean scores using non parametric tests.

Age and PA scores were significantly related with low PA scores more likely to be seen in those 45 years or older (OR 1.474; 95% CI 1.02 to 2.11) when analysed by chi

square tests. Designation and PA scores were significantly related with respondents with low PA scores being more likely to be Professors as compared to Assistant/Associate Professors (OR 1.49; 95% CI 1.04 to 2.12) On non-parametric tests however, Professors were found to have a higher mean score on PA subscale (p value = 0.016).

Type of work had a significant relation with low PA scores. Chronic/Palliative care specialities had the highest number of respondents with low PA scores (36.7%) followed by Surgical (35.8%), Medical (27%) and Non clinical/Supportive (17.9%) fields (P 0.048).

GHQ scores, Job Stress, Job Satisfaction and scores on the MBI domains

The proportion of participants with their GHQ and MBI domain scores

Table14: GHQ-12 scores and MBI domain scores

GHQ-12 score	High EE N (%)	High DP N (%)	Low PA (%)
>4 (N=56)	41 (73.2)**	26 (46.4)**	6 (10.7)
< 4 (N =247)	47 (19)	37(15)	84 (34)**
Total (N = 303)	88 (29)	63 (20.8)	258 (78)

EE: Emotional Exhaustion; DP: Depersonalization; PA: Personal Achievement

** P < 0.001

Participants with high EE scores were more likely to have high scores on the GHQ (OR 3.84; 95% CI 2.84 to 5.20) (Table 12). EE scores were also significant related with overall Job Stress with respondents with high EE scores being more likely to have high job stress (OR 5.74; 95% CI 3.84 to 8.62). EE scores were also significantly related with overall Job Satisfaction with respondents with high EE

scores being more likely to be not satisfied with work (OR 2.37; 95% CI 1.69 to 3.3).

Participants with high DP scores were also more likely to have high scores on the GHQ-12 (OR 3.09; 95% CI 2.05 to 4.67; Table 14). Respondents with high DP scores were also more likely to report high Job Stress (OR 2.87; 95% CI 1.85 to 4.44). Similarly, those with high DP scores were more likely to be not satisfied with work (OR 1.98; 95% CI 1.29 to 3.05).

PA scores dichotomized were significantly related with scores on the General Health Questionnaire. Respondents with low PA scores being more likely to have low scores on the GHQ (OR 3.17; 95% CI = 1.46 to 6.89; Table 14) when analysed by chi square tests. However on non-parametric analysis, respondents with high scores on the GHQ were found to have lower mean PA scores (P <0.001).

Similarly, those with low PA scores were more likely to have low job stress (OR 2.51; 95% CI 1.50 to 4.21) when analysed by chi square tests. However, on non-parametric analysis, respondents with high stress were found to have lower mean PA scores (P <0.001). Again, those with low PA scores were more likely to be satisfied with work (OR 2.89; 95% CI 1.62 to 5.15) on chi square tests. However on non-parametric analysis, respondents with low satisfaction were found to have lower mean PA scores (P<0.001).

Empathy, Job Stress, Job Satisfaction and domains scores on the MBI

Empathy as a mediating variable was assessed in all participants working in clinical disciples using the Jefferson Scale of Physician Empathy (JSPE). Table 15 provides the JSPE mean scores in those scoring high, average, and low on the MBI domains.

Table15: JSPE mean scores across low, average and high scores on MBI

Burnout Domain	N	Mean	Standard Deviation
Emotional Exhaustion**			
High EE	68	113.49	13.39
Average EE	61	107.18	20.61
Low EE	103	106.5	17.99
D**epersonalization**			
High DP	55	109.73	11.76
Average DP	73	108.15	14.33
Low DP	104	108.6	22.12
Personal Accomplishment**			
High PA	85	102.94	14.15
Average PA	69	108.90	23.03
Low PA	78	114.87	13.52
Total	282	80.45	8.11

Scores on the JSPE varied according to levels of EE with high values on the JSPE seen to relate with higher values on the EE subscale (P = 0.008). There was no association between JSPE scores and scores on the DP subscale of the MBI. However, those with lower scores on the PA domain had higher scores on the JSPE compared to those with low PA scores (P = 0.000).

Those who had high EE and low PA scores were more likely to have higher scores on the JSPE than those who did not (P 0.004). There was no significant difference in the JSPE scores in those who had high EE and high DP scores or high DP and low PA scores.

Spiritual or religious beliefs and domain scores on the MBI

Table 16 details the proportion scoring high on the Emotional Exhaustion (EE), Depersonalisation (DP) and low on the Personal Achievement (PA) domains of the MBI.

Table 16:Spiritual beliefs and proportion scoring high on the EE and DP domains and low on the PA domain of the MBI

My religious or spiritual beliefs strongly influence my work	High EE N (%)	High DP N (%)	Low PA N (%)
Agree (N=175)	48 (27.4)	29 (16.6)	61 (34.9)
Disagree (N =128)	40 (31.2)	34(26.6) *	29 (22.7) **
Total (N = 303)	88 (29)	63 (20.8)	258 (78)

*P = 0.034; ** P = 0.022

Influence of spiritual beliefs did not significantly affect scores on the EE scale. DP scores varied significantly with influence of spiritual/religious beliefs, with those disagreeing that their religious or spiritual beliefs strongly influenced their work being more likely to have high DP scores. In other words, having a spiritual or religious motivation influencing one's work had a protective role against scoring high on the DP domain of the MBI (OR 0.55; 95% CI 0.31 to 0.96; Table 13). Significantly greater proportions scoring high on the PA subscale of the MBI endorsed spiritual or religious influences on their work and having high or average scores on the PA domain were nearly twice as likely to not endorse this (OR 1.83; 95% CI 1.09 to 3.07; Table 16).

Sources of stress contributing to Burnout

Table 17 details the sources of stress identified on logistic regression that differentiated those and without high EE scores.

Table 17: Sources of stress identified by logistic regression in those with high scores for Emotional Exhaustion in the MBI

Source of stress	Adjusted Odds Ratios (95% Confidence Intervals)
Feeling under pressure to meet deadlines	4.73 (95% CI = 2.35-9.51)
Having to deal with distressed, angry, or blaming relatives.	3.68 (95% CI 1.51-8.97)
Encountering difficulties with consultant colleagues.	3.61 (95% CI 1.75-7.45)
Disruption of your home life as a result of taking paperwork home.	2.70 (95% CI 1.32-5.53)
Having a conflict of responsibilities (clinical vs. managerial; clinical vs. research).	2.38 (95% CI 1.14-4.97)

Table 18 details the sources of stress contributing to high scores on the Depersonalization (DP) domain of the MBI that were identified by logistic regression

Table 18: Sources of stress identified by logistic regression in those with high Depersonalisation scores of the MBI

Source of stress	Adjusted Odds Ratios (95% Confidence Intervals)
Having to deal with distressed, angry, or blaming relatives.	4.39 (95% CI 1.98-9.73)
Encountering difficulties with consultant colleagues.	4.25 (95% CI 2.14-8.45)
Feeing that you accumulated skills and expertise are not being put to their best use.	2.86 (95% CI 1.46-5.60)
Feeling under pressure to meet deadlines	2.29 (95% CI 1.17-4.49)
Being responsible for the quality of work of other staff.	2.14 (95% CI 1.46-5.60)

Table 19 details the sources of stress contributing to low scores for Personal Achievement on the MBI that were identified by logistic regression.

Table 19: Sources of stress identified by logistic regression in those with low score for Personal Achievement of the MBI

Source of stress	Adjusted Odds Ratios (95% Confidence Intervals)
Having conflicting demands on your time.	2.94 (95% CI 1.70-5.10
Having inadequate housing facilities.	2.92 (95% CI 1.30-6.57)

Comparison of the prevalence and determinants of Job Stress, Job Satisfaction and Burnout between 2008 and 2016

A similar study using the same instruments was done in this institution in 2007-2008(145).

The institution provides housing for its medical faculty and residence on campus is ordinarily compulsory. However, keeping up with housing demands is often difficult and is a potential source of stress. However, adequate housing could also be a source of satisfaction. Adequate housing facilities as a source of stress and satisfaction was not looked at in the previous study but was added to the list of sources of stress as well as satisfaction in this study. Otherwise the methods and instruments used in the two surveys were similar.

The response rate was 80% (345/432) in the 2008 survey and was lower in the 2016 survey where only 58% (304/520) of the eligible member of the faculty returned completed questionnaires.

Table 20 provides the description of participants in the two surveys.

The study populations in the two studies varied significantly only for age. The 2016 survey had a significantly higher proportion of faculty younger than 45 years of age ($p=0.009$). Other demographic details were not significantly different.

Table 20: Characteristics of participants in the 2008 and 2016 surveys

	2008			2016			P value
Age (years)							
	Number	**Mean (SD)**	**Range**	**Number**	**Mean (SD)**	**Range**	
Men	211	40.32 (8.70)	27 -59	175	38.87 (7.41)	28-59	0.38
Women	134	40.79 (8.51)	26-50	128	39.80 (7.77)	28-59	
All	**345**	**40.5 (8.62)**	**26-60**	**303**	**39.30 (7.60)**	**28-59**	
Speciality							
Medical	91	41.02 (9.29)	29-60	63	38.52 (7.73)	28-59	0.73
Surgical	126	40.02 (7.73)	29 -59	120	40.78 (6.78)	28-59	0.97
Chronic care	34	39.88 (9.50)	26- 59	49	39.65 (7.77)	29-59	0.79
Non-clinical	70	40.86 (8.78)	27-59	67	37.30 (8.31)	29-59	0.93
Public health	24	40.88 (9.16)	27-58	*	*	*	
Proportions > or < 45 years of age							
< 45 years	235	68**%**		235	77%		**0.009**
45 years or >	108	32%		68	23%		
Years of post-graduate experience							
Men	211	10.5 (8.3)	0- 34	175	9.0 (7.1)	0- 30	0.89
Women	134	10.6 (8.3)	0.2- 32	129	9.7 (7.4)	1- 36	0.97

Prevalence of Job Stress:

The prevalence of high Job Stress in participants as well as the proportions with high Job Stress according to age, gender, and specialty in both surveys is detailed in Table 21.

In 2008, high Job Stress was reported by 23.8% of faculty surveyed (95% CI 19.6 to 28.5). The prevalence of Job Stress had increased significantly by 7.8% (95% CI 0.9 to 14.8) in 2016 (Table 21). Significant increases in Job Stress were seen mainly in men, those younger than 45 years and in surgical specialities (Table 21).

Table 21: Prevalence of Job Stress in the 2008 and 2016 surveys

Variable	2008		2016		Absolute change (%) (95% CI)	P value
	Proportion (n/N)	% (95% CI)	Proportion (n/N)	% (95% CI)		
Overall	82/345	23.8 (19.6 to 28.5)	96/304	31.6 (26.6 to 37.1)	7.8 (0.9 to 14.8)	**0.03**
Gender						
Men	45/210	21.4 (16.4 to 27.5)	56/175	32.0 (25.5 to 39.2)	10.6 (1.7 to 19.3)	**0.02**
Women	35/133	26.3 (19.6 to 34.4)	40/129	31.0 (23.7 to 39.4)	4.7 (-6.0 to 15.1)	0.40
Age > or < 45 years						
Age < 45 years	61/235	26.0 (20.7 to 31.9)	84/235	35.7 (28.9 to 42.1)	9.8 (1.4 to 18)	**0.02**
Age 45 years or >	19/108	17.6 (11.6 to 25.9)	12/68	17.6 (10.4 to 28.4)	0 (-12.4 to 10.9)	0.90
Specialty						
Medical	26/115*	17.9 (12.5 to 25.0)	21/63*	33.3 (30.0 to 45.6)	15.4 (-2.9 to 28.8)	0.12
Surgical	33/133	24.8 (18.3 to 32.8)	50/120	41.7 (33.2 to 50.6)	16.9 (5.3 to 28.0)	**0.004**
Chronic	9/34	26.5 (14.6 to 43.1)	10/49	20.4 (11.5 to 33.6)	6.1 (-11.9 to 24.9)	0.51
Non-clinical	12/68	17.7 (10.4 to 28.5)	15/68	22.1 (13.9 to 32.3)	4.4 (-9.0 to 17.8)	0.52

n = number with high stress; N = number of participants; CI = Confidence Interval; *Combined public health and medical

Sources of Job Stress

There were some differences in the sources of Job Stress identified by logistic regression as significantly contributing to high Job Stress in the 2008 survey and the 2016 survey. These differences are highlighted in Table 22.

Table 22: Differences in the sources of stress identified by logistic regression contributing to high Job Stress in 2008 and 2016

2008	2016
Disruption of home life as a result of being on call'	Having inadequate housing facilities
Having too great an overall volume of work'	Being involved with the physical suffering of patients
Having inadequate staff to do your job properly'	Feeling you have insufficient input into the management of your unit or institute
(Not assessed)	Having inadequate facilities (equipment, space) to do your job properly
	Disruption of your home life as a result of taking your paper work home

Gender differences in sources of stress identified as significantly contributing to high Job Stress only in 2008 or only in 2016 are detailed in Table 23.

Table 23: Gender differences in sources of stress identified by logistic regression contributing to high Job Stress in 2008 and 2016

2008	2016
In Men	
-	Feeing that your accumulated skills and expertise are not being put to their best use
In Women	
Keeping up-to-date with current clinical and research practices	Disruption of your home life as a result of taking your paper work home
Being responsible for the quality of the work of other staff	Having a conflict of responsibilities
Being involved with the emotional distress of patients	

Prevalence of Job Satisfaction

Prevalence of Job Satisfaction declined significantly overall from 98.5% to 71.4% (p value<0.05). Prevalence of satisfaction also declined significantly across all age groups as well as both men and women. Details of the prevalence of satisfaction across various groups are given in Table 24.

Table 24: Prevalence of Job Satisfaction in the 2008 and 2016 surveys

Variable	2008		2016		Absolute change (%) (95% CI)	P value*
	Proportion (n/N)	% (95% CI)	Proportion (n/N)	% (95% CI)		
Job Satisfaction						
Overall	**338/343**	**98.5 (96.6 to 99.4)**	**204/304**	**71.4 (66.1 to 71.2)**	**-27.2 (-22.0 to -37.5)**	**< 0.05**
Gender						
Men	207/210	98.6 (95.9 to 99.5)	120/175	68.6 (61.4 to 75)	-30 (-23 to -37.1)	**< 0.05**
Women	131/134	97.8 (93.6 to 99.2)	97/129	75.2 (67.1 to 81.9)	-22.6 (-14.7 to -30.8)	**<0.05**
Age < or > 45 years						
Age < 45 years	231/235	98.3 (95.7 to 99.3)	163/241	67.6 (61.5 to 73.2)	-30.7 (-24.5 to -36.9)	**<0.05**
Age 45 years or >	107/108	99.1 (94.1 to 99.8)	53/62	85.5 (74.7 to 92.2)	-13.6 (-5.7 to 24.4)	**<0.05**

n = number with high stress; N = number of participants; CI = Confidence Interval
*Fischer's Exact Test

Sources of Job Satisfaction: Sources of Job Satisfaction contributing significantly to overall high Job Satisfaction following logistic regression differed in the 2008 and 2016 surveys (Table 25).

Table 25: Differences in sources of satisfaction identified by logistic regression as contributing to overall high Job Satisfaction in 2008 and 2016

2008	2016
In all participants	
Deriving intellectual stimulation from teaching	Being perceived to do the job well by your colleagues
	Being able to bring about positive change in your unit/institution
Not assessed	Having adequate housing facilities
In women compared to men	
	Having a good relationship with patients
	Feeling your clinical experience is used to the full
Not assessed	Having adequate housing facilities
	Having a high level of autonomy
In men compared to women	
	Feeling you have a high level of job security
	Being perceived to do the job well by your colleagues
	Having a high level of responsibility
	Feeling you deal well with relatives

Mental Health

Table 26: Proportions with significant GHQ-12 scores (4 or >) in the 2008 and 2016 surveys

		GHQ-12 score	
		2008 n/N(%)	**2016 n/N (%)**
Age	<45 years	66/236 (28)*	46/235(19.6)*
	>45 years	8/106 (7.5)	11/68(16.2)
Gender	Male	44/209 (21)	32/175(18.3)
	Female	30/133 (23)	25/129 (19.4)
Total (%; 95%CI)		**74/342 (21.6; 17.6 to 26.3)**	**57/304 (18.8; 14.8 to 23.5)**

n= number with GHQ-12 score > 4; N = number of people; *P= 0.04

Overall GHQ scores did not vary significantly in the two surveys (Table 26). There was however a significant decrease in proportion of respondents below the age of 45 years who had high GHQ scores in the 2016 survey compared to 2008.

Burnout:

The proportion of faculty who had high EE, High DP or low PA scores had increased between the two surveys but this was not statistically significant (Table 27).

Table 27: MBI scores in the 2008 and 2016 surveys*

	Emotional Exhaustion (EE)		**Depersonalization (DP)**		**Personal Accomplishment (PA)**	
	2008 (N= 333)	**2016** (N = 303)	**2008** (N= 330)	**2016** N =(303)	**2008** (N=331)	**2016** (N= 303)
Mean (SD)	18.8 (10.8)	19.47 (12.13)	6.9 (5.3)	7.83 (5.98)	30.5 (9.7)	33.15 (8.44)
High: N (%)	77 (23)	88 (28.9)	53 (16)	63 (20.7)	157 (47)	122 (40.1)
Average: N (%)	100 (30)	77 (25.3)	88 (27)	87 (28.6)	101 (31)	91 (29.9)
Low: N (%)	157 (47)	138 (45.4)	189 (57)	153 (50.3)	73 (22)	90 (29.6)

*No significant differences between mean or categorical scores between 2008 and 2016

DISCUSSION

This cross sectional, observational study was done primarily to evaluate the prevalence and significant causes for as well as sources of job stress and job satisfaction as well as methods used to cope with job stress. We also wanted to estimate the prevalence of burnout in the faculty and identify any relation between job stress, satisfaction, burnout and age, gender, designation, marital status, levels of empathy, general mental health and spiritual beliefs.

As mentioned earlier, this study was particularly important as institutions like Christian Medical College and Hospital play a unique part in the healthcare scenario of the country and levels of job stress, satisfaction and burnout in the faculty are important indicators of the health of this, and similar institutions.

Job Stress: Overall 31.6% of all respondents reported high overall stress. This is similar to other studies done around the world, with the commonest prevalence of job stress in doctors quoted at around 30%(40,152), though individual studies have shown prevalence as high as 47%(41).

Compared to the previous study with a similar methodology done in the same institution in 2007-2008, the prevalence of stress showed a significant increase. This could be possibly explained by the fact that the OPD population has risen by more than 200,000 patients and the inpatient population has risen by around 100,000 annually in this period, while the number of faculty has not increased in the same proportion.

Stress varied significantly with designation and Assistant Professors and Associate Professors showed significantly higher levels of stress compared to Professors.

Interestingly, there was no significant difference in levels of stress between Assistant and Associate Professors, perhaps indicative of varying job definitions and responsibilities in different departments. This finding is in keeping with other studies that have found stress levels in doctors decreasing with levels of seniority(11), though some studies from the UK have found the reverse(42), perhaps indicative of changes in working structure and job definitions in the United Kingdom that are not yet relevant in India. There were also significant differences in sources of stress across designations pointing to the fact that interventions to reduce stress would have to be tailored to each individual's job definition.

Type of work also had a significant impact on levels of stress with faculty in surgical specialities reporting the highest stress and those in chronic care specialities reporting the lowest levels of stress. This is in keeping with an earlier study done in this institution among residents(157), though the similar study done among faculty in 2007-2008(145), did not show this pattern.

Stress also varied significantly with age, in keeping with the earlier finding of variations with seniority as well, as other studies done around the world(11,43,44). Gender, however was not found to be a significant factor related to levels of job stress, similar to other studies done elsewhere(33,45,46) as well as a previous study done in this institution(145). Sources of stress between males and females however varied significantly, another finding seen in similar studies done elsewhere(45).

Marital status, levels of empathy and influence of spiritual beliefs did not influence levels of job stress. Higher levels of job stress were significantly related with worse mental health as indicated by higher scores on the General Health Questionnaire; and in keeping with multiple other studies on the subject(13–15,152). This relation

highlights the importance of both studying the levels of, as well as designing interventions for job stress.

Strategies for Coping with Job Stress: The commonest reported strategies for coping could all be described as constructive, with talking to one's spouse and friends being the most commonly reported coping strategy. However, significantly, almost half the sample (46.4%) of the sample reported using at least one coping strategy that could be potentially harmful; like working longer hours, eating unhealthily, smoking cigarettes or drinking alcohol. The levels of drinking alcohol or smoking cigarettes was probably under reported due to fear of negative judgements, though anonymity was assured. Very few people, only about 3% of the sample, reported using any kind of supported or structured forms of coping. These results point to the importance of addressing the problem of using appropriate and constructive methods to cope with job stress by educating faculty in institutions like this one. Informal, community based approaches to reduce job stress may also be beneficial. There were a few differences in strategies used for coping among different age groups as well as between genders.

Job Satisfaction: 71.4% of the sample reported that they were 'satisfied' or 'very satisfied'. This is similar to studies done in similar large centres in developing countries. A study done in the Post Graduate Institute, Chandigarh reported that 73% of the sample was satisfied with their job(67) while another study done in Lahore showed around 80% were satisfied or very satisfied with their job(158). These findings are however significantly different from those done in the West(64,159), with lower job satisfaction reported in developed countries. The reasons for these could be many. Multiple studies in the West have correlated lower satisfaction with changing work practices(42,160) that are not yet very common in developing countries and could be the reasons for this difference.

However, compared to the similar study done in this institution in 2007-2008, levels of satisfaction are significantly lower, pointing to an urgent need to re-evaluate supportive hospital policies; and devise strategies to reduce stress and increase satisfaction.

As with job stress, satisfaction was found to vary among various designations with Professors having higher levels of job satisfaction than Assistant or Associate Professors. Sources of satisfaction also differed significantly between the two. Higher stress and lower satisfaction is often found together in other studies as well and may point to a need to look further into what all could be done in terms of organizational and structural change at the lower levels of the faculty. Similar to the findings with job stress, job satisfaction also changed with age, with older faculty members being more satisfied than younger ones.

Though levels of job satisfaction did not change by gender, sources of satisfaction did vary significantly between males and females. Levels of job satisfaction were not different according to different types of work, indicating that though some types of work like surgical specialities had higher job stress, it did not significantly impact levels of satisfaction as compared with other fields.

Lower levels of job satisfaction were related to higher scores on the General Health Questionnaire, indicating higher levels of mental distress. Job satisfaction did not vary with levels of empathy or influence of spiritual beliefs.

Mental Health: Mental Health was estimated by the General Health Questionnaire-12, and 18.8% of the sample had a significant score indicative of possible psychological distress and morbidity. This is much lower than large scale studies on mental health among doctors in the United Kingdom, that reported levels of

significant scores of 27%(152). It is also marginally lower than a similar study done in this institution in 2007-2008 that reported significant scores among 21%(145). This indicates that as of now, psychological morbidity may not be extremely high in this population and need for targeted, specialized mental health services are lesser than the need for general, informal supportive measures. It is important to note however that the GHQ is only a screening instrument and not a definitive diagnostic tool. Though GHQ scores did not vary significantly by age, gender or type of work; there was a significant difference among various designations. In keeping with the general trend of job stress and satisfaction, Assistant and Associate Professors had higher scores than Professors. A prevalence of high GHQ scores of around 20% of Assistant Professors while not, however, extremely alarming, cannot be ignored altogether.

Empathy: Empathy was measured by the Jefferson Scale for Physician Empathy. The sample had overall high levels of empathy. There was no significant variation across gender, designation, age or type of work. This is in keeping with the findings of a similar study done in 2007 in this institution(145), though not in keeping with earlier research that shows that females tend to have higher scores on empathy rating than males(161,162).

Spiritual Beliefs: 57% of the sample agreed that their spiritual and religious beliefs influenced their work. This is similar to the previous study done on this topic in this institution(145). This issue is of some importance as the modifying effects of spiritual beliefs on levels of stress and burnout has been documented earlier(163). Influence of spiritual beliefs varied significantly among various groups with older, more senior faculty reporting a greater influence that spirituality had on their work than junior faculty. Females also reported a greater influence of spirituality than males. Reasons

for this variation could conceivably be cultural differences in upbringing, or in coping adopted by women and older professionals.

Burnout: Significant scores were seen in various subscales of the burnout inventory. Overall 28.9% of the present sample had high scores for Emotional Exhaustion, 20.8% had high Depersonalization scores and 29.6% had low levels of Personal Achievement. 19.1% of the sample had significant scores on two or more domains and only 3 respondents had significant scores on all three domains. This shows an increase in levels of scores as compared to the previous study in this institution in 2007(145).This is significantly lower compared to a large scale study in the European Union on burnout which showed that 12% of the sample had significant scores on all three domains(85), though that sample being among family doctors as opposed to multiple specialities in this study may be a factor. Another large scale study done in the United States also showed much higher rates of burnout with almost 50% of doctors having significant scores in at least one subscale(30). This is perhaps explained by the higher job satisfaction in our sample as compared to studies on the topic done in the West as burnout rates have been most strongly linked with levels job satisfaction and job stress(13). In this study as well, Job Satisfaction varied inversely, and Job Stress varied directly with levels of burnout.

Though levels of stress seem to have increased and levels of satisfaction seemed to have decreased between 2008 and 2016 in this institution, overall levels of burnout did not show a significant increase. However, three participants in the 2016 survey had high scores on all three domains of the MBI; while none in the 2008 survey had high scores on all domains.

In keeping with the general trends observed in this study, burnout trends varied significantly with age and designation with more senior faculty having lower rates of burnout.

Empathy had a modifying effect with high empathy relating with higher scores on Emotional Exhaustion and lower Personal Achievement, a finding that has been shown in similar studies in the past(32,145). A greater influence of spiritual beliefs was found to correlate with higher personal achievement and lower rates of depersonalization, similar to the study done in this institution in 2007(145). Burnout scores did not vary significantly with gender, marital status and age. Type of work influenced depersonalization scores, with surgical specialities having higher scores. Chronic care fields tended to have lower scores on Personal Achievement. These variations among various specialities have been seen elsewhere(164) and may be influenced by the nature of work, with high stress, fast paced surgical specialities lending themselves to doctors using depersonalization as a defence mechanism and poorer outcome fields with high patient morbidity like chronic care specialities, leading to a lower feeling of achievement in doctors.

Results on the Personal Achievement scale showed a significant difference on chi square tests as compared to non-parametric tests. Results were considerable skewed which could account for this variance. On the chi square tests however, older and more senior faculty had lower personal achievement, a possible hypothesis for this being lesser challenge and variety in work with more administrative tasks for senior faculty, or an effect of age on perceptions of what has been achieved to date. Non parametric tests however did not show this and showed lower mean scores for personal achievement in junior faculty, keeping with the trend of higher burnout in junior faculty. On chi square tests, job satisfaction was inversely related with personal

achievement scores and job stress was directly related to them. This is an unexpected finding, which was not seen when data wereanalysed using non-parametric tests, perhaps pointing to the fact that the findings on those tests were more valid as data was significantly skewed.

Limitations:

The biggest limitation of the study was the response rate of 58% with a large number of faculty members not returning the questionnaires. Characteristics of the study sample showed a higher proportion of junior faculty as compared to the staff list, which may have significantly affected the results. Other limitations are those inherent in this study design as it was cross sectional and the direction of various relationships observed could not be concluded. The questionnaire was also a self-reported one and may not be representative of the true values of measured variables, if assessed objectively.

Conclusions

In this cross-sectional study of self-reported levels of Job Stress, Job Satisfaction, and Burnout in medical and surgical faculty in a busy tertiary care, teaching general and multi-speciality hospital:

- 31.6% of respondents reported significant job stress. 70.4% of respondents reported high job satisfaction.
- 28.9% of the sample had high Emotional Exhaustion, 20.8% had high Depersonalization and 29.6% had low levels of Personal Achievement. 19.1% of the sample had significant scores on two or more domains and only three respondents had significant scores on all three domains.
- Age and designation significantly affected levels of job stress, satisfaction as well as burnout. Type of work affected levels of job stress as well as levels of burnout. Gender did not significantly affect levels of job stress, satisfaction or burnout. Empathy affected specific domains of burnout but not rates of job stress or satisfaction. Influence of spiritual beliefs affected specific domains of burnout but not rates of job stress or satisfaction
- Compared to a similar study done among faculty of Christian Medical College and Hospital in 2007-2008, the rates of overall job stress showed a significant increase from 23.8% to 31.6% and rates of job satisfaction showed a significant decline from 98.5% to 71.4%. There was no significant change in the rates of burnout. The study populations had significantly different characteristics in terms of age, which may have affected these findings.

Bibliography

1. Familoni O. An overview of stress in medical practice. Afr Health Sci. 2008 Mar;8(1):6–7.

2. Godin I, Kittel F, Coppieters Y, Siegrist J. A prospective study of cumulative job stress in relation to mental health.BMC Public Health. 2005;5:67.

3. Matthews KA, Gump BB. CHronic work stress and marital dissolution increase risk of posttrial mortality in men from the multiple risk factor intervention trial. Arch Intern Med. 2002 Feb 11;162(3):309–15.

4. Jagdish K. Dua. Job Stressors and Their Effects on Physical Health, Emotional Health and Job Satisfaction in a University. J Educ Adm. 1994 Mar 1;32(1):59–78.

5. Jamal M. Job stress and job performance controversy: An empirical assessment. Organ Behav Hum Perform. 1984 Feb 1;33(1):1–21.

6. Karasek, R. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. Administrative Science Quarterly, 24(2), 285-308. doi:1. Retrieved from http://www.jstor.org/stable/2392498 doi:1.

7. Siegrist J. Adverse health effects of high-effort/low-reward conditions. J Occup Health Psychol. 1996 Jan;1(1):27–41.

8. Johnson JV, Hall EM. Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population. Am J Public Health. 1988 Oct;78(10):1336–42.

9. Wall TD, Bolden RI, Borrill CS, Carter AJ, Golya DA, Hardy GE, et al. Minor psychiatric disorder in NHS trust staff: occupational and gender differences. Br J Psychiatry. 1997 Dec 1;171(6):519–23.

10. Ramirez AJ, Graham J, Richards MA, Cull A, Gregory WM. Mental health of hospital consultants: the effects of stress and satisfaction at work. Lancet Lond Engl. 1996 Mar 16;347(9003):724–8.

11. Prevalence of depression and distress in a large sample of Canadian residents, interns, and fellows. Am J Psychiatry. 1987 Dec 1;144(12):1561–6.

12. Firth-Cozens J. Emotional distress in junior house officers. Br Med J Clin Res Ed. 1987 Aug 29;295(6597):533–6.

13. McManus IC, Winder BC, Gordon D. The causal links between stress and burnout in a longitudinal study of UK doctors. Lancet Lond Engl. 2002 Jun 15;359(9323):2089–90.

14. Johnson WD. Predisposition to emotional distress and psychiatric illness amongst doctors: the role of unconscious and experiential factors. Br J Med Psychol. 1991 Dec;64 (Pt 4):317–29.

15. Shortt SE. Psychiatric illness in physicians. Can Med Assoc J. 1979 Aug 4;121(3):283–8.

16. Ross M. Suicide among Physicians. Int J Psychiatry Med. 1971 Sep 1;2(3):189–98.

17. Rose K, Rosow I. PHysicians who kill themselves. Arch Gen Psychiatry. 1973 Dec 1;29(6):800–5.

18. Murray R. Originally published as Volume 1, Issue 7868PSYCHIATRIC ILLNESS IN DOCTORS. The Lancet. 1974 Jun 15;303(7868):1211–3.

19. von Brauchitsch H. The physician's suicide revisited. J Nerv Ment Dis. 1976 Jan;162(1):40–5.

20. Frank E, Dingle AD. Self-Reported Depression and Suicide Attempts Among U.S. Women Physicians. Am J Psychiatry. 1999 Dec 1;156(12):1887–94.

21. Kõlves K, De Leo D. Suicide in medical doctors and nurses: an analysis of the Queensland Suicide Register. J Nerv Ment Dis. 2013 Nov;201(11):987–90.

22. Schernhammer ES, Colditz GA. Suicide rates among physicians: a quantitative and gender assessment (meta-analysis). Am J Psychiatry. 2004 Dec;161(12):2295–302.

23. Rosta J, Aasland OG. Changes in the lifetime prevalence of suicidal feelings and thoughts among Norwegian doctors from 2000 to 2010: a longitudinal study based on national samples. BMC Psychiatry. 2013;13:322.

24. Roberts SE, Jaremin B, Lloyd K. High-risk occupations for suicide. Psychol Med. 2013 Jun;43(6):1231–1240.

25. Palhares-Alves HN, Palhares DM, Laranjeira R, Nogueira-Martins LA, Sanchez ZM, Palhares-Alves HN, et al. Suicide among physicians in the state of São Paulo, Brazil, across one decade. Rev Bras Psiquiatr. 2015 Jun;37(2):146–9.

26. Kirkcaldy BD, Trimpop R, Cooper CL. Working hours, job stress, work satisfaction, and accident rates among medical practitioners and allied personnel. Int J Stress Manag. 1997 Apr;4(2):79–87.

27. Johnson JV, Hall EM, Theorell T. Combined effects of job strain and social isolation on cardiovascular disease morbidity and mortality in a random sample of the Swedish male working population. Scand J Work Environ Health. 1989;15(4):271–9.

28. Kivimäki M, Leino-Arjas P, Luukkonen R, Riihimäi H, Vahtera J, Kirjonen J. Work stress and risk of cardiovascular mortality: prospective cohort study of industrial employees. BMJ. 2002 Oct 19;325(7369):857.

29. Firth-Cozens J. Doctors, their wellbeing, and their stress. BMJ. 2003 Mar 29;326(7391):670–1.

30. Shanafelt TD, Boone S, Tan L, et al. BUrnout and satisfaction with work-life balance among us physicians relative to the general us population. Arch Intern Med. 2012 Oct 8;172(18):1377–85.

31. Falkum E, Vaglum P. The relationship between interpersonal problems and occupational stress in physicians. Gen Hosp Psychiatry. 2005 Aug;27(4):285–91.

32. Benson J, Magraith K. Compassion fatigue and burnout: the role of Balint groups. Aust Fam Physician. 2005 Jun;34(6):497–8.

33. Simpson LA, Grant L. Sources and magnitude of job stress among physicians. J Behav Med. 1991 Feb;14(1):27–42.

34. Jm L. Stress and the doctor's health. Aust Fam Physician. 1996 Aug;25(8):1249–53, 1256.

35. Dollard MF, LaMontagne AD, Caulfield N, Blewett V, Shaw A. Job stress in the Australian and international health and community services sector: A review of the literature. Int J Stress Manag. 2007;14(4):417–45.

36. Butterfield PS. The stress of residency: A review of the literature. Arch Intern Med. 1988 Jun 1;148(6):1428–35.

37. Hillhouse JJ, Adler CM, Walters DN. A simple model of stress, burnout and symptomatology in medical residents: A longitudinal study. Psychol Health Med. 2000 Feb 1;5(1):63–73.

38. Collier VU, McCue JD, Markus A, Smith L. Stress in Medical Residency: Status Quo after a Decade of Reform? Ann Intern Med. 2002 Mar 5;136(5):384–90.

39. Sargent MC, Sotile W, Sotile MO, Rubash H, Barrack RL. Stress and coping among orthopaedic surgery residents and faculty. J Bone Joint Surg Am. 2004 Jul;86–A(7):1579–86.

40. Riley GJ. Understanding the stresses and strains of being a doctor. Med J Aust. 2004 Oct 4;181(7):350-.

41. Caplan RP. Stress, anxiety, and depression in hospital consultants, general practitioners, and senior health service managers.BMJ. 1994 Nov 12;309(6964):1261–3.

42. Kapur N, Borrill C, Stride C. Psychological morbidity and job satisfaction in hospital consultants and junior house officers: multicentre, cross sectional survey. BMJ. 1998 Aug 22;317(7157):511–2.

43. Kang MK, Kang YS, Kim JR, Jeong BG, Park KS, Kam S, et al. [The levels of psychosocial stress, job stress and related factors of medical doctors practicing at local clinics]. J Prev Med Public Health Yebang Ŭihakhoe Chi. 2007 Mar;40(2):177–84.

44. Bagaajav A, Myagmarjav S, Nanjid K, Otgon S, Chae YM. Burnout and Job Stress among Mongolian Doctors and Nurses.Ind Health. 2011;49(5):582–8.

45. Alexandros-Stamatios G. Antoniou, Marilyn J. Davidson, Cary L. Cooper. Occupational stress, job satisfaction and health state in male and female junior hospital doctors in Greece. J Manag Psychol. 2003 Sep 1;18(6):592–621.

46. Sarp N, Yarpuzlu AA, Önder ÖR. A comparative study of organizational stress in three hospitals in Ankara, Turkey. Stress Health. 2005 Aug 1;21(3):193–7.

47. Rout U. Job Stress among General Practitioners and Nurses in Primary Care in England. Psychol Rep. 1999 Dec 1;85(3):981–6.

48. Simoens S, Scott A, Sibbald B. Job Satisfaction, Work-Related Stress and Intentions to Quit of Scottish GPS. Scott Med J. 2002 Aug 1;47(4):80–6.

49. Pl S, Gj C. The stress of metropolitan general practice. Med J Aust. 1998 Aug;169(3):133–7.

50. Tattersall AJ, Bennett P, Pugh S. Stress and coping in hospital doctors. Stress Med. 1999 Apr;15(2):109–13.

51. Freeborn DK. Satisfaction, commitment, and psychological well-being among HMO physicians. West J Med. 2001 Jan;174(1):13–8.

52. Rutter H, Herzberg J, Paice E. Stress in doctors and dentists who teach. Med Educ. 2002 Jun 1;36(6):543–9.

53. Li J, Yang W, Cho S. Gender differences in job strain, effort-reward imbalance, and health functioning among Chinese physicians. Soc Sci Med. 2006 Mar;62(5):1066–77.

54. Gross EB. Gender differences in physician stress. J Am Med Womens Assoc 1972. 1992 Aug;47(4):107–112; 114.

55. Richardsen AM, Burke RJ. Occupational stress and job satisfaction among physicians: sex differences. Soc Sci Med 1982. 1991;33(10):1179–87.

56. Hargreave M, Petersson BH, Kastrup MC. [Gender differences in stress among physicians]. Ugeskr Laeger. 2007 Jun 18;169(25):2418–22.

57. Buxrud EG. [Is health service a good working place for female physicians?]. Tidsskr Den Nor Lægeforen Tidsskr Prakt Med Ny Række. 1993 Jun 10;113(15):1869–72.

58. Aasland OG, Olff M, Falkum E, Schweder T, Ursin H. Health complaints and job stress in Norwegian physicians: The use of an overlapping questionnaire design. Soc Sci Med. 1997 Dec 1;45(11):1615–29.

59. Mental health, job satisfaction, and job stress among general practitioners. | The BMJ [Internet]. [cited 2016 Jul 20]. Available from: http://www.bmj.com/content/298/6670/366.short

60. Gross EB. Gender differences in physician stress: why the discrepant findings? Women Health. 1997;26(3):1–14.

61. Swanson V, Power KG, Simpson RJ. Occupational stress and family life: A comparison of male and female doctors. J Occup Organ Psychol. 1998 Sep 1;71(3):237–60.

62. Rout U. Stress among general practitioners and their spouses: a qualitative study. Br J Gen Pr. 1996 Mar 1;46(404):157–60.

63. Fahrenkopf AM, Sectish TC, Barger LK, Sharek PJ, Lewin D, Chiang VW, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. BMJ. 2008 Mar 1;336(7642):488–91.

64. Sullivan P, Buske L. Results from CMA's huge 1998 physician survey point to a dispirited profession. CMAJ Can Med Assoc J J Assoc Medicale Can. 1998 Sep 8;159(5):525–8.

65. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. The Lancet. 2009 Nov 20;374(9702):1714–21.

66. Moss PJ, Lambert TW, Goldacre MJ, Lee P. Reasons for considering leaving UK medicine: questionnaire study of junior doctors' comments. BMJ. 2004 Nov 25;329(7477):1263.

67. Sharma M, Goel S, Singh SK, Sharma R, Gupta PK. Determinants of Indian physicians' satisfaction & dissatisfaction from their job. Indian J Med Res. 2014 Mar;139(3):409–17.

68. Pal S, Saksvik PØ. Work-family conflict and psychosocial work environment stressors as predictors of job stress in a cross-cultural study. Int J Stress Manag. 2008;15(1):22–42.

69. Kumari K, Sharma S. Social support, organizational role stress and well being: A study of medicos. Psychol Stud [Internet]. 1990 Nov [cited 2016 Jul 29]; Available from: http://psycnet.apa.org/psycinfo/1991-25753-001

70. Saini N, Agrawal S, Bhasin S, Bhatia M, Sharma A. Prevalence of stress among resident doctors working in Medical Colleges of Delhi. Indian J Public Health. 2010;54(4):219.

71. JCDR - Psychological stress, Medical students, and Personal/Curricular variables. [Internet]. [cited 2016 Jul 29]. Available from: http://www.jcdr.net/article_fulltext.asp?id=850

72. Maslach C, Schaufeli WB, Leiter MP. Job Burnout. Annu Rev Psychol. 2001;52(1):397–422.

73. Schaufeli WB, Leiter MP, Maslach C. Burnout: 35 years of research and practice. Career Dev Int. 2009 Jun 19;14(3):204–20.

74. Freudenberger HJ. Staff Burn-Out. J Soc Issues. 1974 Jan 1;30(1):159–65.

75. Friberg T. Burnout: From Popular Culture to Psychiatric Diagnosis in Sweden. Cult Med Psychiatry. 2009 Dec;33(4):538–58.

76. Maslach C. The Client Role in Staff Burn-Out.J Soc Issues. 1978 Oct 1;34(4):111–24.

77. Maslach C, Jackson SE. The measurement of experienced burnout.J Organ Behav. 1981 Apr 1;2(2):99–113.

78. Feldt T, Rantanen J, Hyvönen K, Mäkikangas A, Huhtala M, Pihlajasaari P, et al. The 9-item Bergen Burnout Inventory: factorial validity across organizations and measurements of longitudinal data. Ind Health. 2014;52(2):102–12.

79. Shirom A, Melamed S. A comparison of the construct validity of two burnout measures in two groups of professionals.Int J Stress Manag. 2006;13(2):176–200.

80. Kristensen TS, Borritz M, Villadsen E, Christensen KB. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work Stress. 2005 Jul 1;19(3):192–207.

81. Gil-Monte PR, Figueiredo-Ferraz H. Psychometric properties of the "Spanish burnout inventory" among employees working with people with intellectual disability. J Intellect Disabil Res JIDR. 2013 Oct;57(10):959–68.

82. Borgogni L, Consiglio C, Alessandri G, Schaufeli WB. "Don't throw the baby out with the bathwater!" Interpersonal strain at work and burnout. Eur J Work Organ Psychol. 2012 Dec 1;21(6):875–98.

83. Schutte N, Toppinen S, Kalimo R, Schaufeli W. The factorial validity of the Maslach Burnout Inventory-General Survey (MBI-GS) across occupational groups and nations. J Occup Organ Psychol. 2000 Mar 1;73(1):53–66.

84. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry.World Psychiatry. 2016 Jun;15(2):103–11.

85. Soler JK, Yaman H, Esteva M, Dobbs F, Asenova RS, Katić M, et al. Burnout in European family doctors: the EGPRN study. Fam Pract. 2008 Aug 1;25(4):245–65.

86. Grassi L, Magnani K. Psychiatric Morbidity and Burnout in the Medical Profession: An Italian Study of General Practitioners and Hospital Physicians. Psychother Psychosom. 2000 Nov 3;69(6):329–34.

87. Olkinuora M, Asp S, Juntunen J, Kauttu K, Strid L, Äärimaa M. Stress symptoms, burnout and suicidal thoughts in Finnish physicians. Soc Psychiatry Psychiatr Epidemiol. 25(2):81–6.

88. Al-Dubai SAR, Rampal KG. Prevalence and Associated Factors of Burnout among Doctors in Yemen.J Occup Health. 2010;52(1):58–65.

89. Librarian I. Prevalence and Determinants of Burnout Syndrome among Primary Healthcare Physicians in Qatar [Internet]. [cited 2016 Jul 31]. Available from: http://www.hrhresourcecenter.org/node/4343

90. Bhugra D, Bhui KS, Gupta KR. Burnout and stress among doctors and dentists in North India. Int J Cult Ment Health. 2008 Jun 1;1(1):24–9.

91. Jasperse M, Herst P, Dungey G. Evaluating stress, burnout and job satisfaction in New Zealand radiation oncology departments. Eur J Cancer Care (Engl). 2014 Jan;23(1):82–8.

92. Amoafo E, Hanbali N, Patel A, Singh P. What are the significant factors associated with burnout in doctors? Occup Med. 2015 Mar 1;65(2):117–21.

93. Leiter: Burnout and health - Google Scholar [Internet]. [cited 2016 Aug 3]. Available from: https://scholar.google.co.in/scholar?q=related:ZVjs1hnNgLwJ:scholar.google.com/&hl=en&as_sdt=0,5

94. Allen J, Mellor D. Work Context, Personal Control, and Burnout amongst Nurses. West J Nurs Res. 2002 Dec 1;24(8):905–17.

95. Thomas NK. REsident burnout.JAMA. 2004 Dec 15;292(23):2880–9.

96. Male D, May D. Stress and Health, Workload and Burnout in Learning Support Coordinators in Colleges of Further Education. Support Learn. 1998 Aug 1;13(3):134–8.

97. Taris TW, Bakker AB, Schaufeli WB, Stoffelsen J, Dierendonck DV.Job Control and Burnout across Occupations. Psychol Rep. 2005 Dec 1;97(3):955–61.

98. Maslach C, Leiter MP. Early predictors of job burnout and engagement. J Appl Psychol. 2008;93(3):498–512.

99. Ronen S, Mikulincer M. Attachment orientations and job burnout: The mediating roles of team cohesion and organizational fairness. J Soc Pers Relatsh. 2009 Jun 1;26(4):549–67.

100. Leiter MP, Frank E, Matheson TJ. Demands, values, and burnout Relevance for physicians. Can Fam Physician. 2009 Dec 1;55(12):1224–1225.e6.

101. Ying-Wen Liang. The relationships among work values, burnout, and organizational citizenship behaviors: A study from hotel front-line service employees in Taiwan. Int J Contemp Hosp Manag. 2012 Mar 2;24(2):251–68.

102. Kooranian F, Khosravi AR, Esmaeeli H. The relationship between hardiness/ locus of control and burnout in nurses. Horiz Med Sci. 2008 Apr 15;14(1):58–66.

103. N S, W N, R O. Stress, burnout and locus of control in German nurses. Int J Nurs Stud. 2000 2000;37(2):95–9.

104. McManus I, Keeling A, Paice E. Stress, burnout and doctors' attitudes to work are determined by personality and learning style: A twelve year longitudinal study of UK medical graduates. BMC Med. 2004;2:29.

105. Kim HJ, Shin KH, Swanger N. Burnout and engagement: A comparative analysis using the big five personality dimensions. Int J Hosp Manag. 2009;28(1):96–104.

106. Nagy S, Davis LG. Burnout: A Comparative Analysis of Personality and Environmental Variables. Psychol Rep. 1985 Dec 1;57(3 suppl):1319–26.

107. Kumar S, Fischer J, Robinson E, Hatcher S, Bhagat RN. Burnout and Job Satisfaction in New Zealand Psychiatrists: a National Study. Int J Soc Psychiatry. 2007 Jul 1;53(4):306–16.

108. Wolpin J, Burke RJ, Greenglass ER. Is Job Satisfaction an Antecedent or a Consequence of Psychological Burnout? Hum Relat. 1991 Feb 1;44(2):193–209.

109. Penn M, Romano JL, Foat D. The relationship between job satisfaction and burnout: A study of human service professionals. Adm Ment Health. 15(3):157–65.

110. Faragher EB, Cass M, Cooper CL. The relationship between job satisfaction and health: a meta-analysis. Occup Environ Med. 2005 Feb 1;62(2):105–12.

111. Michie S, Williams S. Reducing work related psychological ill health and sickness absence: a systematic literature review. Occup Environ Med. 2003 Jan 1;60(1):3–9.

112. Parker PA, Kulik JA. Burnout, self- and supervisor-rated job performance, and absenteeism among nurses. J Behav Med. 1995 Dec;18(6):581–99.

113. MA ST-T, MSc AO, MA AV, PhD RK, Paavo Jäppinen MD Dm. Burnout as a Predictor of Medically Certified Sick-Leave Absences and Their Diagnosed Causes. Behav Med. 2005 Apr 1;31(1):18–32.

114. Williams ES, Konrad TR, Scheckler WE, Pathman DE, Linzer M, McMurray JE, et al. Understanding Physicians' Intentions to Withdraw from Practice: The Role of Job Satisfaction, Job Stress, Mental and Physical Health. Health Care Manag Rev Winter 2001. 2001;26(1):7–19.

115. Goldberg R, Boss RW, Chan L, Goldberg J, Mallon WK, Moradzadeh D, et al. Burnout and its correlates in emergency physicians: four years' experience with a wellness booth. Acad Emerg Med Off J Soc Acad Emerg Med. 1996 Dec;3(12):1156–64.

116. Moreno Jiménez B, Gálvez Herrer M, Rodríguez Carvajal R, Sanz Vergel AI. A study of physicians' intention to quit: the role of burnout, commitment and difficult doctor-patient interactions. Las intenciones de abandono del personal médico: el papel del burnout, el compromiso y las dificultades en las relaciones médico-paciente [Internet]. 2012 [cited 2016 Aug 3]; Available from: https://repositorio.uam.es/handle/10486/666543

117. Halbesleben JRB, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. Health Care Manage Rev. 2008 Mar;33(1):29–39.

118. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med. 2002 Mar 5;136(5):358–67.

119. Shanafelt TD, Balch CM, Bechamps G, Russell T, Dyrbye L, Satele D, et al. Burnout and medical errors among American surgeons. Ann Surg. 2010 Jun;251(6):995–1000.

120. Linzer M, Baier Manwell L, Mundt M, Williams E, Maguire A, McMurray J, et al. Organizational Climate, Stress, and Error in Primary Care: The MEMO Study. In: Henriksen K, Battles JB, Marks ES, Lewin DI, editors. Advances in Patient Safety: From Research to Implementation (Volume 1: Research Findings) [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2005 [cited 2016 Aug 3]. (Advances in Patient Safety). Available from: http://www.ncbi.nlm.nih.gov/books/NBK20448/

121. Williams ES, Manwell LB, Konrad TR, Linzer M. The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: results from the MEMO study. Health Care Manage Rev. 2007 Sep;32(3):203–12.

122. Bakker AB, Le Blanc PM, Schaufeli WB. Burnout contagion among intensive care nurses. J Adv Nurs. 2005 Aug;51(3):276–87.

123. González-Morales MG, Peiró JM, Rodríguez I, Bliese PD. Perceived collective burnout: a multilevel explanation of burnout. Anxiety Stress Coping. 2012 Jan;25(1):43–61.

124. Honkonen T, Ahola K, Pertovaara M, Isometsä E, Kalimo R, Nykyri E, et al. The association between burnout and physical illness in the general population--results from the Finnish Health 2000 Study. J Psychosom Res. 2006 Jul;61(1):59–66.

125. Kivimäki M, Virtanen M, Elovainio M, Kouvonen A, Väänänen A, Vahtera J. Work stress in the etiology of coronary heart disease--a meta-analysis. Scand J Work Environ Health. 2006 Dec;32(6):431–42.

126. Toppinen-Tanner S, Ahola K, Koskinen A, Väänänen A. Burnout predicts hospitalization for mental and cardiovascular disorders: 10-year prospective results from industrial sector. Stress Health. 2009 Oct 1;25(4):287–96.

127. Armon G, Melamed S, Shirom A, Shapira I. Elevated burnout predicts the onset of musculoskeletal pain among apparently healthy employees. J Occup Health Psychol. 2010 Oct;15(4):399–408.

128. Ahola K. Occupational burnout and health. Työuupumus ja terveys [Internet]. 2007 Dec 8 [cited 2016 Aug 3]; Available from: https://helda.helsinki.fi/handle/10138/19788

129. Lindblom KM, Linton SJ, Fedeli C, Bryngelsson I-L. Burnout in the working population: relations to psychosocial work factors. Int J Behav Med. 13(1):51–9.

130. McCranie EW, Brandsma JM. Personality antecedents of burnout among middle-aged physicians.Behav Med Wash DC. 1988;14(1):30–6.

131. Middeldorp CM, Cath DC, Boomsma DI. A twin-family study of the association between employment, burnout and anxious depression.J Affect Disord. 2006 Feb;90(2–3):163–9.

132. Korkeila JA, Töyry S, Kumpulainen K, Toivola J-M, Räsänen K, Kalimo R. Burnout and self-perceived health among Finnish psychiatrists and child psychiatrists: a national survey. Scand J Public Health. 2003 Mar 1;31(2):85–91.

133. Richardsen AM, Burke RJ, Leiter MP. Occupational demands, psychological burnout and anxiety among hospital personnel in norway. Anxiety Stress Coping. 1992 Jan 1;5(1):55–68.

134. Turnipseed DL. Anxiety and Burnout in the Health Care Work Environment. Psychol Rep. 1998 Apr 1;82(2):627–42.

135. Cunradi CB, Greiner BA, Ragland DR, Fisher JM. Burnout and alcohol problems among urban transit operators in San Francisco. Addict Behav. 2003 Feb;28(1):91–109.

136. Winwood PC, Winefield AH, Lushington K. The role of occupational stress in the maladaptive use of alcohol by dentists: a study of South Australian general dental practitioners. Aust Dent J. 2003 Jun;48(2):102–9.

137. Sonneck G, Wagner R. Suicide and Burnout of Physicians. OMEGA - J Death Dying. 1996 Nov 1;33(3):255–63.

138. Bianchi R, Schonfeld IS, Laurent E. Is it Time to Consider the "Burnout Syndrome" A Distinct Illness? Front Public Health [Internet]. 2015 Jun 8 [cited 2016 Aug 2];3. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4459038/

139. Bianchi R, Schonfeld IS, Laurent E. Is burnout a depressive disorder? A reexamination with special focus on atypical depression.Int J Stress Manag. 2014 Nov;21(4):307.

140. Schaufeli WB. Past performance and future perspectives of burnout research.SA J Ind Psychol [Internet]. 2003 Oct 24 [cited 2016 Aug 2];29(4). Available from: http://www.sajip.co.za/index.php/sajip/article/view/127

141. Lemaire JB, Wallace JE. Not all coping strategies are created equal: a mixed methods study exploring physicians' self reported coping strategies. BMC Health Serv Res. 2010;10:208.

142. King MB, Cockcroft A, Gooch C. Emotional distress in doctors: sources, effects and help sought. J R Soc Med. 1992 Oct;85(10):605–8.

143. Graham J, Albery IP, Ramirez AJ, Richards MA. How hospital consultants cope with stress at work: implications for their mental health. Stress Health. 2001 Mar 1;17(2):85–9.

144. Weiner EL, Swain GR, Wolf B, Gottlieb M. A qualitative study of physicians' own wellness-promotion practices. West J Med. 2001 Jan;174(1):19–23.

145. Lal A TP. Lal A, Tharyan, A, Tharyan P. The prevalence and determinants of job stress, job satisfaction, coping, burnout, and mental distress, and the effects of empathy and religious or spiritual beliefs, in medical and surgical faculty of a teaching hospital in South India: a cross-sectional survey. Undergraduate research award winning paper (submitted for publication).

146. A User's Guide to the General Health Questionnaire [Internet]. [cited 2016 Sep 8]. Available from: https://books.google.co.in/books/about/A_User_s_Guide_to_the_General_Health_Que.html?id=LpSuGQAACAAJ

147. Banks MH, Clegg CW, Jackson PR, Kemp NJ, Stafford EM, Wall TD. The use of the General Health Questionnaire as an indicator of mental health in occupational studies. J Occup Psychol. 1980 Sep 1;53(3):187–94.

148. Schrnitz N, Kruse J, Tress W. Psychometric properties of the General Health Questionnaire (GHQ-12) in a German primary care sample. Acta Psychiatr Scand. 1999 Dec 1;100(6):462–8.

149. Carlotto MS, Câmara SG. Psychometrics properties of Maslach Burnout Inventory in a multifunctional sample. Estud Psicol Camp. 2007 Sep;24(3):325–32.

150. Poghosyan L, Aiken LH, Sloane DM. Factor structure of the Maslach burnout inventory: An analysis of data from large scale cross-sectional surveys of nurses from eight countries. Int J Nurs Stud. 2009 Jul;46(7):894–902.

151. Schaufeli WB, Bakker AB, Hoogduin K, Schaap C, Kladler A. on the clinical validity of the maslach burnout inventory and the burnout measure. Psychol Health. 2001 Sep 1;16(5):565–82.

152. Ramirez AJ, Graham J, Richards MA, Gregory WM, Cull A. Mental health of hospital consultants: the effects of stress and satisfaction at work. The Lancet. 1996 Mar 16;347(9003):724–8.

153. Hojat M, Gonnella JS, Mangione S, Nasca TJ, Magee M. Physician empathy in medical education and practice: experience with the Jefferson scale of physician empathy. Semin Integr Med. 2003 Mar;1(1):25–41.

154. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement, and relationship to gender and specialty. Am J Psychiatry. 2002 Sep;159(9):1563–9.

155. Tavakol S, Dennick R, Tavakol M. Psychometric properties and confirmatory factor analysis of the Jefferson Scale of Physician Empathy. BMC Med Educ. 2011;11:54.

156. The Jefferson Scale of Physician Empathy: Preliminary Psycho... : Academic Medicine [Internet]. LWW. [cited 2016 Sep 8]. Available from: http://journals.lww.com/academicmedicine/Fulltext/2009/09000/The_Jefferson_Scale_of_Physician_Empathy_.14.aspx

157. Sandeep I. Sandeep I. Job stress, coping and burnout in post-graduate medical and surgical registrars at a tertiary care hospital in South India. MD Thesis.Tamil Nadu MGR

Medical University, Department of Psychiatry; Christian Medical College, Vellore; 2001. Tamil Nadu MGR Medical University;

158. Atif K, Khan HU, Maqbool S. Job satisfaction among doctors, a multi-faceted subject studied at a tertiary care hospital in Lahore. Pak J Med Sci. 2015;31(3):610–4.

159. Sibbald B, Bojke C, Gravelle H. National survey of job satisfaction and retirement intentions among general practitioners in England. BMJ. 2003 Jan 4;326(7379):22.

160. Arigoni F, Bovier PA, Sappino AP. Trend of burnout among Swiss doctors. Swiss Med Wkly. 2010;140:w13070.

161. Hemmerdinger JM, Stoddart SD, Lilford RJ.A systematic review of tests of empathy in medicine. BMC Med Educ. 2007;7:24.

162. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Veloksi JJ, Magee M. The Jefferson Scale of Physician Empathy: Further Psychometric Data and Differences by Gender and Specialty at Item Level. Acad Med. 2002 Oct;77(10).

163. Jensen PM, Trollope-Kumar K, Waters H, Everson J. Building physician resilience. Can Fam Physician Médecin Fam Can. 2008 May;54(5):722–9.

164. Shanafelt TD, Balch CM, Bechamps GJ, Russell T, Dyrbye L, Satele D, et al. Burnout and career satisfaction among American surgeons. Ann Surg. 2009 Sep;250(3):463–71.

Appendix

Form for Data Collection

General Information

1. **Department (including sub-specialty):**

2. **Designation:** Tutor / Assistant Professor / Associate professor / Professor

3. **Age**(in years): 4. **Gender:** Male/Female

5. Post-graduate qualifications: (circle all relevant):

None/ Diploma/ MD / MS / MPhil / PhD / DM / MCh / Other (Please specify)

6.Number of years after completing basic post-graduate degree:

7.Marital status: Single / Married / Separated / Spouse deceased

8.Number of children: None / One / Two / Three / Four / > Four

QUESTIONNAIRE 1

Stressful aspects of your work

To what extent have the following factors contributed to stress you have experienced in your job in the past few months? Please rate each factor by circling the relevant number on the 0 to 3 scale. If not applicable, please rate '0'.

		Extent contributes to stress			
		Not at all	A little	Quite a bit	A lot
1	Being involved with the physical suffering of patients	0	1	2	3
2	Encountering difficulties in relationships with junior medical staff	0	1	2	3
3	Feeling you have insufficient input into the management of your unit or institution	0	1	2	3
4	Disruption of your home life through spending long hours at work	0	1	2	3
5	Having inadequate facilities (e.g. equipment, space) to do your job properly	0	1	2	3
6	Having to deal with distressed, angry or blaming relatives	0	1	2	3
7	Keeping up to date with current clinical and research practices	0	1	2	3
8	Having to take on more managerial responsibilities	0	1	2	3
9	Encountering difficulties in relationships with consultant colleagues	0	1	2	3
10	Feeling under pressure to meet deadlines	0	1	2	3
11	Being responsible for the quality of the work of other staff	0	1	2	3
12	Being involved with the emotional distress of patients	0	1	2	3

13	Encountering difficulties in relationships with administrative staff, e.g. secretaries	0	1	2	3
14	Having too great an overall volume of work	0	1	2	3
15	Feeling you are poorly paid for the job you do	0	1	2	3
16	Encountering difficulties in relationships with managers	0	1	2	3
17	Having conflicting demands on your time (e.g. patient care/management/research/college)	0	1	2	3
18	Having inadequate staff to do your job properly	0	1	2	3
19	Dealing with the threat of being sued for malpractice	0	1	2	3
20	Disruption of your home life as a result of taking paperwork home	0	1	2	3
21	Feeling that your accumulated skills and expertise are not being put to their best use	0	1	2	3
22	Disruption of your home life as a result of being on call	0	1	2	3
23	Having a conflict of responsibilities (e.g. clinical vs. managerial; clinical vs. research)	0	1	2	3
24	Uncertainty over the future funding of your unit/institution	0	1	2	3
25	Being responsible for the welfare of other staff	0	1	2	3
26	Having inadequate housing facilities	0	1	2	3

27**. Overall, how stressful do you find your work? (Circle one number with 0 being not at all stressful and 4 being extremely stressful)**

Not at all stressful 0 1 2 3 4 Extremely stressful

Satisfying aspects of your work

To what extent have the following factors contributed to the satisfaction you have derived from your job in the past few months? Please rate each factor by circling the relevant number on the 0 to 3 scale. If not applicable, please rate '0'

		Extent contributes to satisfaction			
		Not at all	A little	Quite a bit	A lot
1	Having a high level of responsibility	0	1	2	3
2	Being perceived to do the job well by your colleagues	0	1	2	3
3	Being able to bring about positive change in your unit/institution	0	1	2	3
4	Having good relationships with patients	0	1	2	3
5	Feeling you have the staff necessary to do a good job	0	1	2	3
6	Deriving intellectual stimulation from research	0	1	2	3
7	Having a high level of autonomy	0	1	2	3
8	Having opportunities for personal learning (developing clinical/research/management skills)	0	1	2	3
9	Having good relationships with other staff members	0	1	2	3
10	Having variety in your job	0	1	2	3
11	Feeling you have adequate financial resources to do agood job	0	1	2	3
12	Being involved in activities that contribute to the development of your profession	0	1	2	3
13	Feeling you have a high level of job security	0	1	2	3
14	Deriving intellectual stimulation from teaching	0	1	2	3
15	Feeling you have adequate facilities to do a good job	0	1	2	3
16	Feeling your clinical experience is used to the full in the job you do	0	1	2	3
17	Feeling you deal well with relatives	0	1	2	3
18	Having adequate housing facilities	0	1	2	3

19. Overall, how satisfying do you find your work? (Circle one number with 0 being not at all satisfying and 4 being extremely satisfying)

Not at all satisfying 0 1 2 3 4 Extremely satisfying

Ways of coping with Stress:

Please circle which of the following are ways you usually employ to cope with job stress? You may select as many as applicable.

1. Taking exercise/playing sport.
2. Talking to colleagues formally, i.e. in a regular support group.
3. Re-organising your work to reduce stress.
4. Pursuing hobbies/leisure activities, e.g.: gardening/ listening to music.
5. Learning techniques for relaxation, e.g. physical relaxation/meditation.
6. Talking to colleagues informally
7. Talking to your spouse/family/friends.
8. Taking annual leave.
9. Smoking cigarettes
10. Working longer hours
11. Not eating as healthily as you would wish)
12. Drinking alcohol
13. Taking other drugs
14. Taking prescription drugs
15. Obtaining formal psychological support.

QUESTIONNAIRE 2

Jefferson Scale (JSPE)

Instructions: Please indicate the extent of your agreement or disagreement with *each* of the following statements by writing the appropriate rating number on the underlined space provided before each statement. Please use the following 7-point scale (*a higher number on the scale indicates more agreement):*

1-------2-------3-------4-------5-------6-------7

Strongly Disagree ***Strongly Agree***

---

1. __ My understanding of how my patients and their families feel does not influence medical or surgical treatment.

2. __ My patients feel better when I understand their feelings.

3. __ It is difficult for me to view things from my patients' perspectives.

4. __ I consider understanding my patients' body language as important as verbal communication in caregiver-patient relationships.

5. __ I have a good sense of humor that I think contributes to a better clinical outcome.

6. __ Because people are different, it is difficult for me to see things from my patients' perspectives.

7. __ I try not to pay attention to my patients' emotions in history taking or in asking about their physical health.

8. __ Attentiveness to my patients' personal experiences does not influence treatment outcomes.

9. __ I try to imagine myself in my patients' shoes when providing care to them.

10. __ My patients value my understanding of their feelings which is therapeutic in its own right.

11. __ Patients' illnesses can be cured only by medical or surgical treatment; therefore, emotional ties to my patients do not have a significant influence on medical or surgical outcomes.

12. __ Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.

13. __ I try to understand what is going on in my patients' minds by paying attention to their non-verbal cues and body language.

14. __ I believe that emotion has no place in the treatment of medical illness.

15. __ Empathy is a therapeutic skill without which success in treatment is limited.

16. __ An important component of the relationship with my patients is my understanding of their emotional status, as well as that of their families.

17. __ I try to think like my patients in order to render better care.

18. __ I do not allow myself to be influenced by strong personal bonds between my patients and their family members.

19. __ I do not enjoy reading non-medical literature or the arts.

20. __ I believe that empathy is an important therapeutic factor in medical or surgical treatment.

21. ----- My religious or spiritual beliefs strongly influences my approach to my work and patients

QUESTIONNAIRE 3

The following questions relate to your general state over the past few weeks. Please enter the number indicating which option you think is closest to the truth in the last column.

In the past few weeks have you..

	0	1	2	3
Been able to concentrate on what you are doing?	Better than usual	Same as usual	Less than usual	Much less than usual
Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that you are playing a useful part in things?	More so than usual	Same as usual	Less than usual	Much less than usual
Felt capable of making decisions about things?	More so than usual	Same as usual	Less than usual	Much less than usual
Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been able to enjoy your normal day to day activities?	More so than usual	Same as usual	Less than usual	Much less than usual
Been able to face up to your problems?	More so than usual	Same as usual	Less than usual	Much less than usual
Been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been losing confidence in yourself	Not at all	No more than usual	Rather more than usual	Much more than usual
Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling reasonably happy, all things considered?	More so than usual	Same as usual	Less than usual	Much less than usual

QUESTIONNAIRE 4

These are 22 statements of job related feelings. Please read each statement very carefully and decide if you ever feel this way about your job. Each statement should be rated using the following scale in the underlined space next to it :

0- Never
1- A few times a year or less
2- Once a month or less
3- A few times a month
4- Once a week
5- A few times a week
6- Every day

No item should be left unanswered

1. I feel emotionally drained from my work. _____
2. I feel used up at the end of the workday. _____
3. I feel fatigued when I get up early in the morning and have to face another day on the job _____
4. I can easily understand how people I work with feel about things _____
5. I feel I treat some people in an impersonal manner. _____
6. Working with people all day is really a strain for me. _____
7. I deal very effectively with problems people bring me at work _____

8. I feel burned out from my work. _____

9. I feel I am making a difference and influencing other people's lives through my work _____

10. I have become more callous towards people since I took this job _____

0- Never
1- A few times a year or less
2- Once a month or less
3- A few times a month
4- Once a week
5- A few times a week
6- Every day

11. I worry that this job is hardening me emotionally. _____

12. I feel very energetic. _____

13. I feel frustrated by my job. _____

14. I feel I'm working too hard on my job. _____

15. I don't really care what happens to some people I encounter at work. _____

16. Working with people directly puts too much stress on me _____

17. I can easily create a relaxed atmosphere with people at work. _____

18. I feel exhilarated after working with people closely on my job _____

19. I have accomplished many worthwhile things in this job. _____

20. I feel like I'm at the end of my rope. _____

21. In my work, I deal with my emotional problems very calmly. _____

22. I feel others at work blamed me for some of their problems. _____